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L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

1891

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 4 IN SET 179

Models RA-160, RA-162 (Coded R-8) Serial No. 6020637 & up.

To eliminate the slight potential difference between the signal and sweep chassis the following changes were made:

1. Remove R23, the 100KΩ resistor, connected between terminal 1 of M5 (High-Low Signal Switch) and ground.
2. Remove R24, the 5.6Ω resistor between pin 3 of the speaker plug socket and ground.
3. Remove the wire connected between the center arm of R1 (Vertical Hold Control) and pin 3 of the speaker plug socket.
4. Disconnect the lead connecting pin 7 of the chassis connecting plug and pin 3 of the speaker socket plug at the speaker socket plug. Connect this lead to the center arm of R1.
5. Connect a buss wire between the center arm of R1 and ground.
6. Disconnect the lead connecting M5 (High-Low Signal Switch) and pin 3 of the speaker socket plug.
7. Connect a 56KΩ resistor between pin 1 of M5 (High-Low Signal Switch) and ground.
8. Connect a 56KΩ resistor between pins 1 and 3 of M5 (High -Low Signal Switch).

Models RA-160, RA-162 (Coded R-8) Serial No. 6023363 & up.

To eliminate parasitic oscilliation in the filament supply wiring the following change was made: Disconnect the filament lead running from pin 4 of V-16, the second vertical sync clipper, and pin 8 of V18, the horizontal sync clipper, at V-16. Connect a filament choke (Dumont part #21008972) in series with this lead and reconnect to pin 4 of V-16.

Model RA-162B

Model RA-162B is the same as Model RA-162 except for the following:

VERTICAL OSCILLATOR AND SWEEP AMPLIFIER

The 6BL7 vertical oscillator and sweep amplifier (V-17) has been replaced with 2 separate tubes. In the new circuit, a 6C4 is used as the vertical oscillator and a 6AU5 is used as the vertical output tube. A schematic of the new circuit is given in fig. 1 on reverse side.

V-16, the 12AT7 sync clipper, has been replaced with a 6AB4.

Two coils have been added in the output of the ratio detector. A partial schematic of the new circuit is shown in fig. 2 on reverse side.

The vertical yoke damping resistors have been changed from 390Ω to 560Ω. The horizontal anti-ringing capacitor has been changed from 68 to 82MMF.

Two FM traps have been included in the IF filter unit (L2) connected between the antenna terminals and the tuner input. Because these traps are not required in most areas, all receivers are shipped with the traps shorted out. If FM interference is encountered the following procedures should be used:

Remove the cover from the IF Filter Unit, L2.

Remove the jumper wires connected across the FM traps. The FM traps are located between the IF filter unit and the antenna terminals of the receiver.

Replace the cover.

Adjust the FM trap slugs for minimum interference.

(continued on reverse side)

DUMONT MODELS RA-160, RA-162, RA-162B

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PRODUCTION CHANGES
BULLETIN 55

PRODUCTION CHANGES
BULLETIN 55

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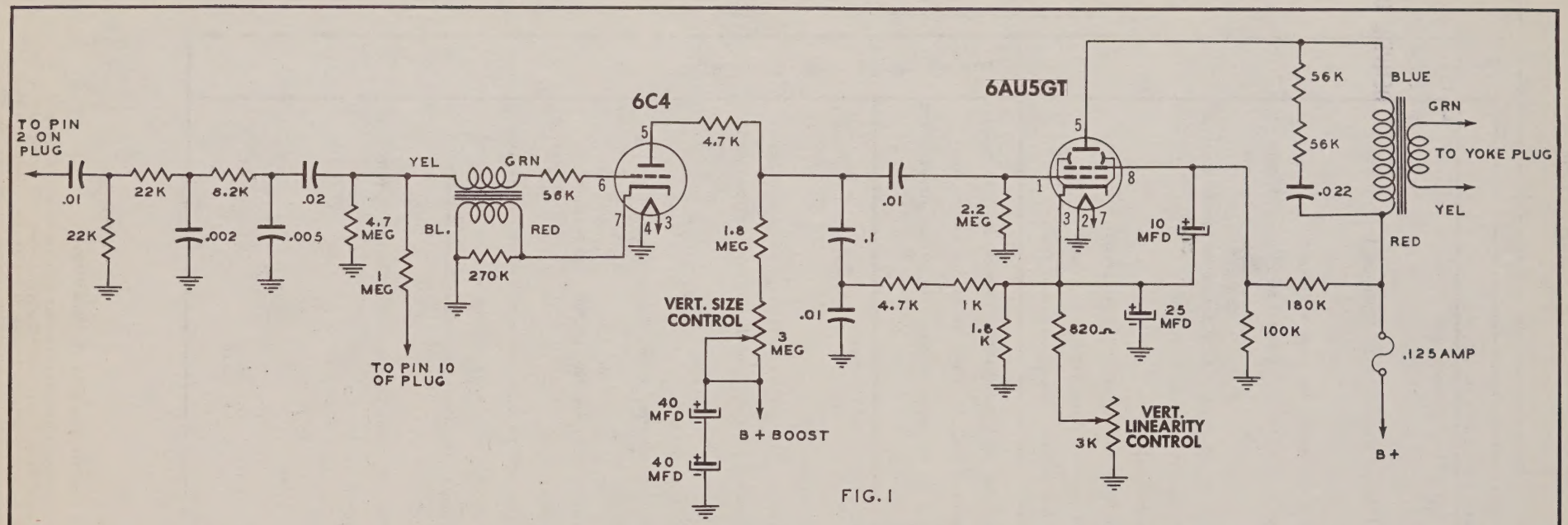

TO PIN 2 ON PLUG
.01
22K
22K
.002
6.2K
.005
.02
4.7 MEG
1 MEG
TO PIN 10 OF PLUG
YEL
BL.
GRN
RED
56K
270K
6C4
5
6
7
4
3
4.7K
1.8 MEG
VERT. SIZE CONTROL
3 MEG
.01
.1
40 MFD
40 MFD
B + BOOST
6AU5GT
5
1
8
3
2
7
2.2 MEG
4.7K
1K
1.8 K
820Ω
10 MFD
25 MFD
100K
180K
56K
56K
.022
BLUE
GRN
TO YOKE PLUG
YEL
RED
.125 AMP
B+
VERT. LINEARITY CONTROL
3K

FIG. 1

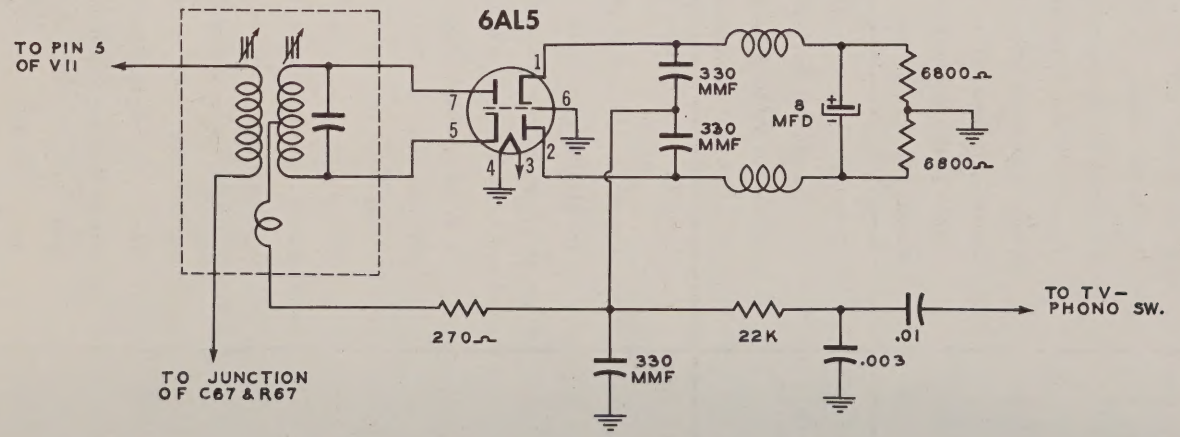
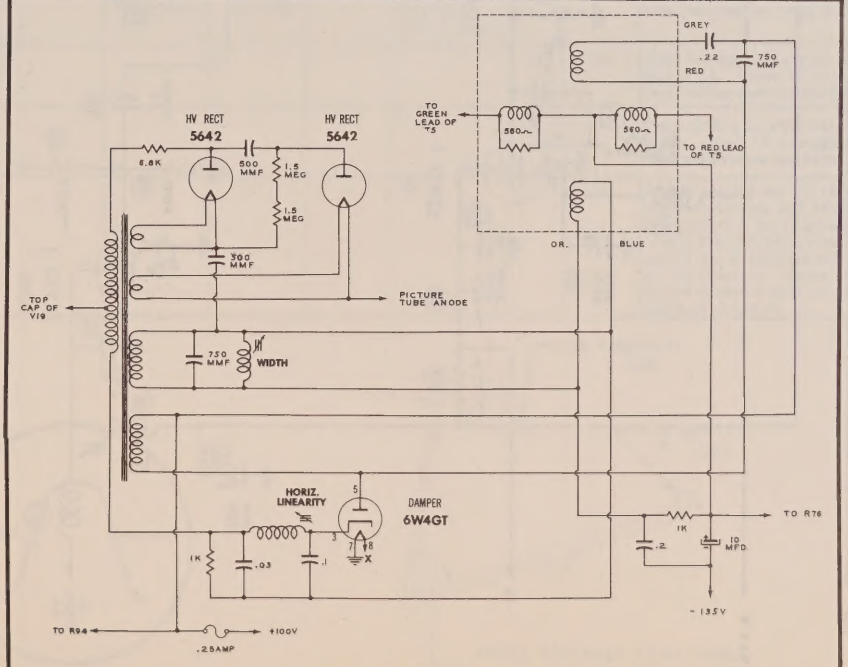

TO PIN 5 OF V11
6AL5
1
7
6
5
4
3
2
330 MMF
330 MMF
8 MFD
6800Ω
6800Ω
TO TV-PHONO SW.
270Ω
330 MMF
22K
.01
.003
TO JUNCTION OF C67 & R67

FIG. 2

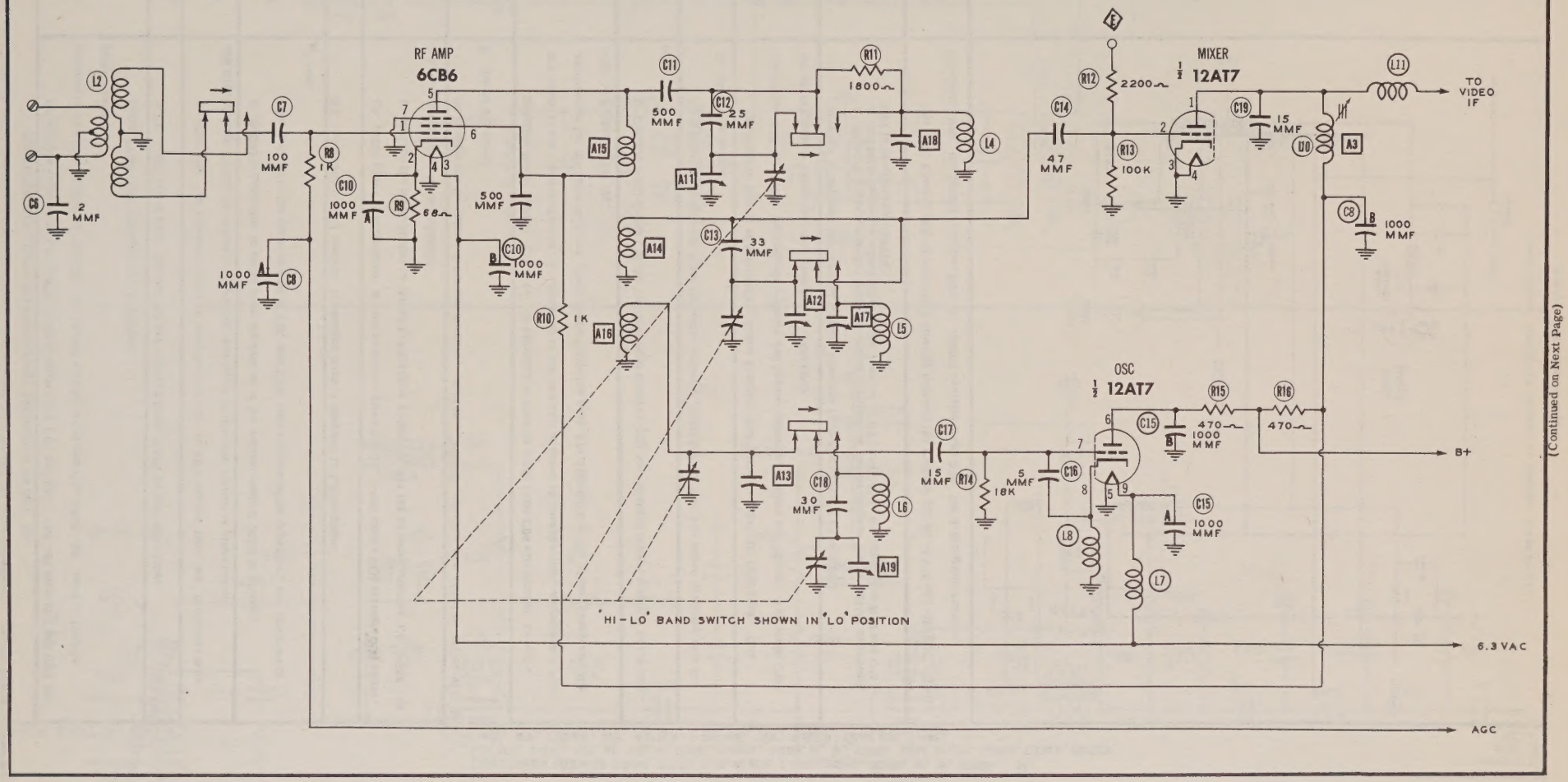
SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 10 IN SET 124

	Production changes on Ch. 1-260, 1-261 through Code CO4 and Ch. 1-366, -66 through Code CO3 are covered in Photofact Folder 10, Set 124. It should also be noted that Ch. 1-366, -66 uses a 17BP4A picture tube. Later Production Changes are as follows:
Ch. 1-366 (Code CO4)	In Ch. 1-366 coded CO4 V13 and V18 are changed from 12AU7 to type 6SN7 tubes.
Ch. 1-366 (Code CO5)	To eliminate the filament isolation transformer for the 6W4 damper tube, the Horizonal Scan and High Voltage Circuit is revised. A partial schematic of this new circuit is given below.
Ch. 1-366 (Code CO6)	A .005MFD capacitor is added from the bottom of the volume control (R1B) to ground. C54, located in the plate circuit of V12, and C56, tone compensation capacitor, are returned to ground.
Ch. 1-366 (Code CO7)	R7, the Vertical Hold control, is changed from 1 Megohm to 1.5 megohm.
Ch. 1-260 (Code CO5)	Ch. 1-260 coded CO5 contains all the revisions given for Ch. 1-366 Codes CO4 through CO7 above. In addition the audio socket as listed in Photofact Folder 10, Set 124 as being used on Ch. 1-366, -66 only is incorporated in this chassis.
Ch. 1-260 (Code CO6) Ch. 1-366 (Code CO8)	To isolate the B- voltage from the Audio Socket a .25MFD capacitor was added in series with the B- line to the socket.
Ch. 1-441	Sylvania Model 7110XB, Ch. 1-441, is identical to chassis 1-366 Code C06 circuitwise, except a new tuner is used in this chassis. A schematic of the new unit is given on reverse side. Alignment instructions for the tuner only are given on the following page. For alignment of the IF and sweep circuits refer to Folder 10, Set 124.
Ch. 1-441 (Code C01)	In Chassis 1-441 Coded C01 the Vertical Hold Control (R7) was changed from 1 megohm to 1.5 megohm.
Ch. 1-441 (Code C02)	To isolate the B- voltage from the audio socket a .25MFD capacitor was added in series with the B- line to the socket.
Ch. 1-366 (Code C09) Ch. 1-441 (Code C03)	The Cathode (pin 7) of V10 (6AU6), Sound Limiter, was connected directly to ground. This eliminates R52 and C49B, the cathode resistor and bypass capacitor. When this change was made C49A, the screen bypass capacitor, was changed to .005MFD.
Ch. 1-366 (Code C10) Ch. 1-441 (Code C04)	In order to supress the vertical retrace lines the following changes were made: A .005MFD capacitor added from the center terminal of the Brightness Control (R1A) to ground. A .003MFD capacitor added between the junction of R77 and C66 to the junction of R46 and C44. C44 is returned to -135VDC.
Ch. 1-366 (Code C11)	The AGC Control (R2) is connected directly between the Cathode pin (8) of V14 and -135VDC. This eliminates R38, the 330KΩ resistor, R37, the 560KΩ resistor, and R39, the 2.2megohm resistor.
	 HIGH VOLTAGE CIRCUIT FOR SYLVANIA TV CHASSIS 1-356 & 1-441

(continued on reverse side)

SYLVANIA MODELS 4120M, 4130B, E, M, W (Ch. 1-260), 6110X, 6120B, M, W, 6130B, M, W (Ch. 1-261), 72B, M, 73B, M, 7110X, 7111MA, 7120B, M, W, 7130B, E, M, W (Ch. 1-366), 7110XF, 7120BF, MF, WF, 7130BF, MF, WF (Ch. 1-366-66), 71M, 7110XB, 7111M (Ch. 1-441).

L. F. ELECTRONICS
3924 MAGNOLIA
DENVER, COLORADO



(Continued on Next Page)

RF TUNER ALIGNMENT (CHASSIS 1-441)

The use of two marker generators is required to align this tuner. Marker generator No. 1 is connected through a 500MMF capacitor to the vertical input lead of the oscilloscope. This marker is tuned to 21.9MC and is used to provide a reference marker on the response curve. Marker generator No. 2 is connected (through a 2 or 3MMF capacitor) across the sweep generator at the antenna terminals.
If the sweep generator has a built-in marker it will be used for marker No. 2.
Remove the First Video IF Amp. tube (V3) and connect a 150Ω resistor across its grid resistor (R19).
During alignment of this tuner loading of the various circuits is required. Loading may be accomplished by touching the point referred to with the blade of a small screwdriver and placing the finger on the metal shank.
Connect the negative lead of a 2 volt battery to the tuner AGC terminal (terminal 2 on terminal strip) connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

LOW BAND ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC Swp.)	83.25MC 87.75MC	6	Vert. Amp. thru 5KΩ to point (F) Low side to chassis.	A11	Place loading screwdriver on stator of second section from rear of tuning gang. Adjust all so single peak occurs centered between the markers
2.	"	"	"	"	"	"	A12	Place loading screwdriver on stator of rear section of tuning gang. Adjust A12 so single peak response appears centered between the markers as shown in fig. 1.
3.	"	"	"	"	"	"	A13	Without loading adjust A13 so the sound marker coincides with the reference marker with sound and picture markers above 70%.
4.	"	"	57MC (10MC Swp.)	55.25MC 59.75MC	2	"	A14	Place loading screwdriver on stator plates of rear section of tuning gang. With a non-metallic pick vary turn spacing of A14 until single peak occurs midway between the markers as shown in fig. 1.
5.	"	"	"	"	"	"	A15	Place loading screwdriver on stator plates of second section from rear of tuning gang. Adjust turns of A15 until single peaks occur centered between markers.
6.	"	"	"	"	"	"	A16	Without loading adjust A16 so sound marker coincides without reference marker.
7.	"	"	"	"	"	"		Adjust spacing between A14 and A15 until the valley in top of response curve is exactly 30% of total. Repeat steps 1 thru 7 needed to obtain proper overall response.

HIGH BAND ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp.)	211.25MC 215.75MC	13	Vert. amp. thru 5KΩ to point (F). Low side to chassis.	A17	Place loading screwdriver on ungrounded end of L4. Adjust A17 until single peak occurs centered between the markers as shown in fig. 1.
9.	"	"	"	"	"	"	A18	Place loading screwdriver on ungrounded end of L5. Adjust A18 so single peak occurs centered between the markers.
10.	"	"	"	"	"	"	A19	Without loading adjust A19 until sound marker and reference marker coincide.
11.	"	"	"	"	"	"		If either marker falls below 70%, increase the coupling between L4 and L5 by decreasing the angle between the coils. Refer to fig. 2.
12.	"	"	177MC (10MC Swp.)	177.25MC 179.75MC	7	Vert. amp. thru 5KΩ to point (F). Low side to chassis.	L6	Adjust coil turns so sound marker and reference marker coincide on response curve.
13.	"	"	"	"	"	"	L5	Place loading screwdriver on ungrounded lead of L4. Adjust L5 so single peak occurs centered between the markers.
14.	"	"	"	"	"	"	L4	Place loading screwdriver on ungrounded end of L5. Adjust L4 so single peak occurs centered between markers.
15.	"	"	"	"	"	"	L6	Without loading retouch L6 turns so sound marker coincides with reference marker. If the valley in the response curve is more or less than 30% adjust the angle between L4 and L5 (fig. 2) until the valley is exactly 30% of total response. Repeat steps 8 thru 15 as needed to obtain optimum response on both Channels 7 and 13.

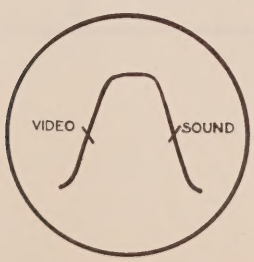


FIG.1

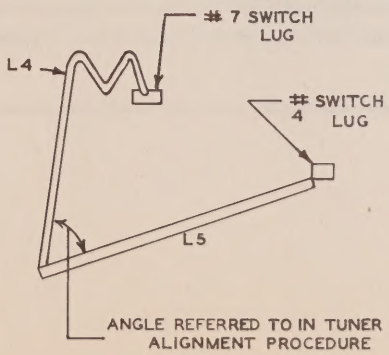


FIG.2

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 10 IN SET 120

Ch. 1-356

Chassis 1-356 is similar to Ch. 1-271 covered in Photofact Folder 10 in Set 120 except for the following:

Chassis 1-356 uses a 17BP4A picture tube.

V14, the 12AU7 Sync Amp. and Clipper has been replaced by a 6SN7GT tube. The related components remain the same.

C46 changed to .005MFD.

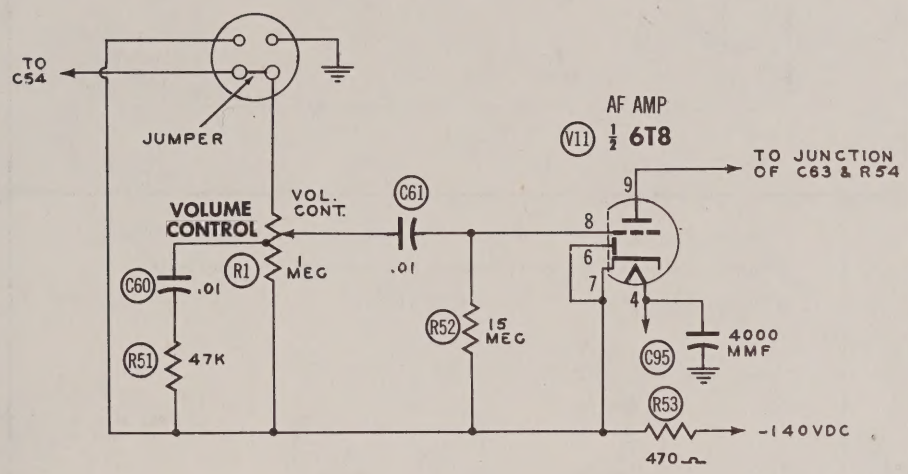
C67 changed to .01MFD.

R106 changed to 180Ω.

R69 changed to 1Meg.

R75 changed to 1.2Meg.

An audio socket was added for use with a phono adaptor kit as shown below.



Ch. 1-356 Code C05

The following changes were made in later Productions of Ch. 1-356.

In order to eliminate 4.5 harmonic interference, a .005MFD capacitor was added from the junction of R51 and R1B to ground.

To isolate B- from the Audio Socket, which was added above, a .25MFD capacitor was added in series with the lead between the socket and B-.

The Vertical Hold Control (R7) was changed to 1.5Meg in order to increase its range.

To remove the heater isolation transformer (T7) for the damper tube (V20), the Horizontal Output and High Voltage Circuit was revised. This circuit is the same as given for Ch. 1-441 on preceeding page.

(Continued on reverse side)

SYLVANIA MODELS 74B, M, 7140M, W (Ch. 1-356)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 10 IN SET 120

Ch. 1-462

Sylvania Models 2130B, M, W, 2140B, M using Chassis 1-462 are identical to Models 5130B, M, W and 5140B, M using Ch. 1-290 (Code C07) as covered in Photofact folder 10 in Set 120 and Production Change Bulletin 17 in Set 128 except for a 20DP4A picture tube and its associated mounting parts.

Ch. 1-462

Vertical retrace suppression was added in Ch. 1-462 (Coded C01). This circuit is the same as for Ch. 1-356 (Code C06) on reverse side.

SYLVANIA MODELS 2130B, M, W, 2140B, M (Ch. 1-462)

Ch. 1-356
Code C06

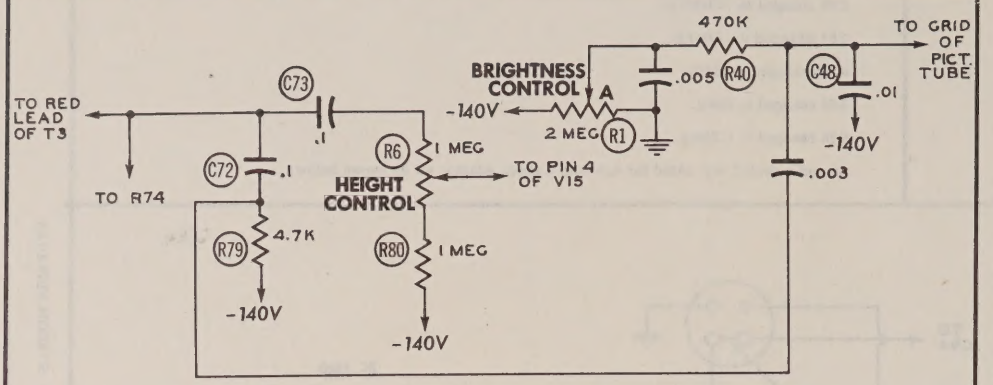
Vertical retrace line suppression was added to Ch. 1-356 coded C06. The following changes were made in the circuit to accomplish this.

A .005MFD capacitor added from the center terminal of the Brightness Control (R1A) to ground.

A .003MFD capacitor added from the junction of R79 and C72 to the junction of R40 and C48.

C48 is returned to -140 VDC instead of to ground.

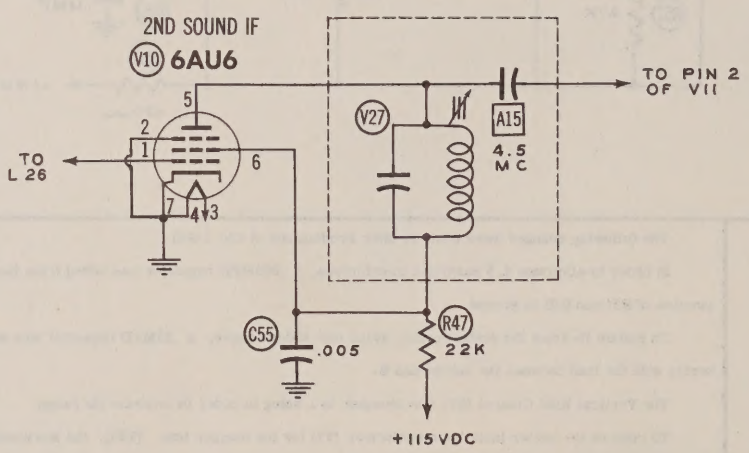
A partial schematic of this circuit is given below.



In addition the Second Sound IF Amp. circuit was revised in Chassis coded CO6

C54, R45, R46 and R48 are omitted in the revised circuit and R47 is changed to 22KΩ.

A partial schematic of the revised circuit is given below:



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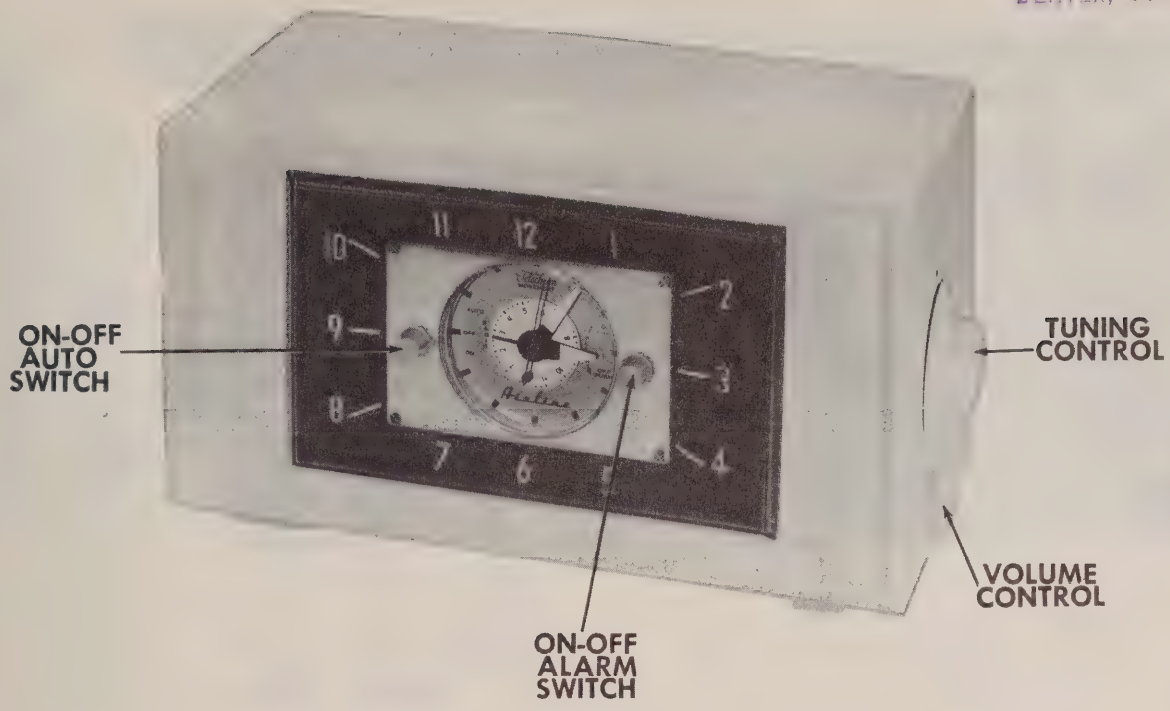
AIRLINE MODELS
25GSL-1560A, 25GSL-1561A



AIRLINE MODELS
25GSL-1560A, 25GSL-1561A

AIRLINE MODEL 25GSL-1560A

TRADE NAME	Airline Models 25GSL-1560A, 25GSL-1561A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Four)	Types 12AU6 Conv., 12AV6 Det.-AVC-AF Amp. 50C5 Audio Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-60Cycle
RATING	.25Amp @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side to signal generator and B-. Volume control should be at maximum position, Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator plates of rear section of tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A3	"
3.		Loop	1400KC	Tune to 1400KC Signal	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

Replace chassis in cabinet, turn tuning gang fully clockwise and set the numeral "1" in "160" to coincide with the index mark on the cabinet.

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PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 25GSL-1560A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		AIRLINE PART No.	STANDARD REPLACEMENT		
V1	Converter	12AU6	12AU6	7BK	
V2	Det-AVC-AF Amp	12AV6	12AV6	7BT	
V3	Audio Output	50C5	50C5	7CV	
V4	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	N-8677	PRS150/50-30-20		EDL5315C	2N520		TVA-3430	Blue
B	20	150					TC26			Red
C	20	15								Green
C2	50		N-6385	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C3	100		N-6015	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C4	.003	600	N-2063	P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C5A	.005									
B	250		♦N-8215		♦ PC-71		♦ 1406-02		♦ 104C5	
C										
C6	.01	400	N-1344	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C7	.05	400	N-1346	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C8	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	

♦ Items C5A, C5B, C5C, R5A, R5B are combined in one unit.
When replacing items seperately C5B and C5C should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2 Meg	½	N-8674	Q13-139	AG-66-S	AB-76	U-55	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A

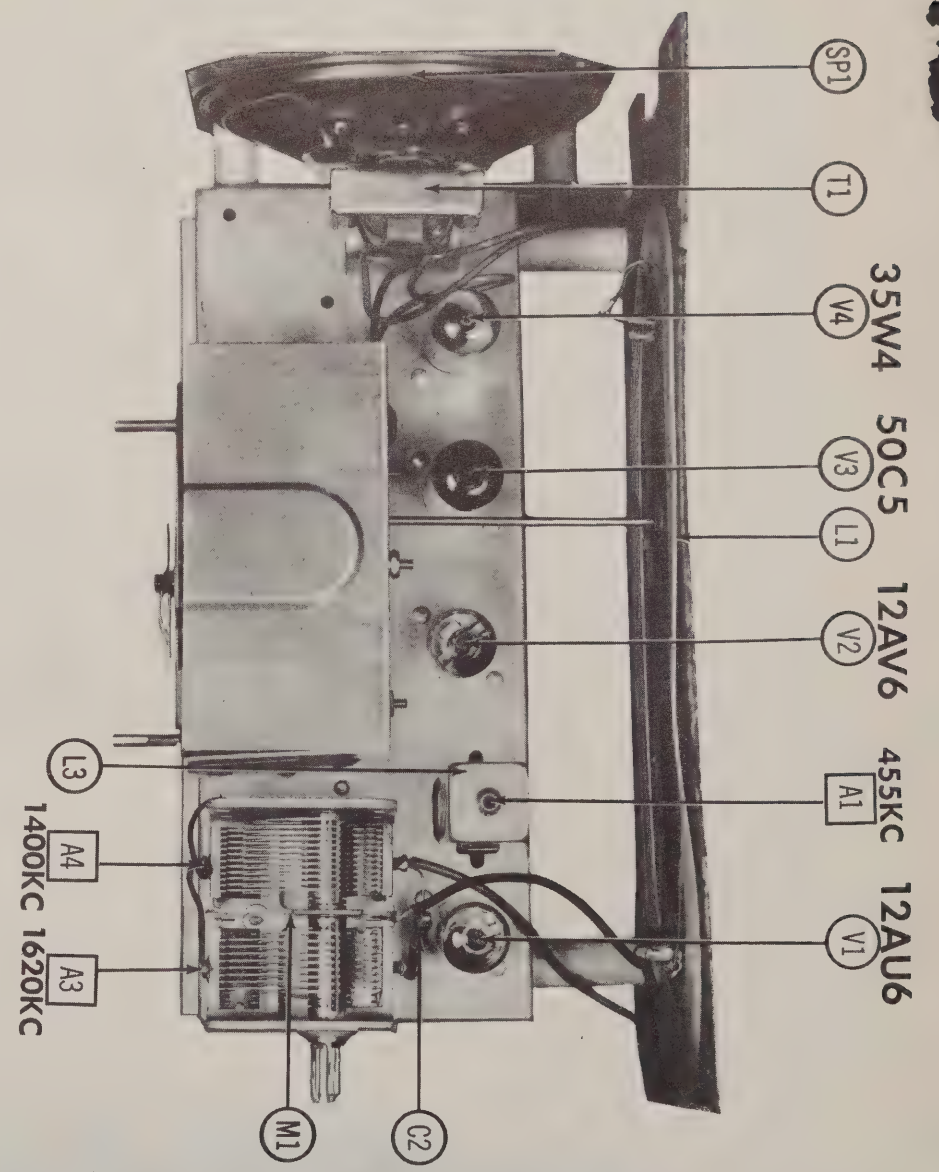
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	AIRLINE PART No.	IRC PART No.	
R2	2.2Meg	½	N-4277	BTS-2.2Meg	
R3	6.8Meg	½	N-4028	BTS-6.8Meg	
R4	68Ω	2	N-6014		
R5A	250KΩ	½	♦ N-8215		
B	500KΩ	½			

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	AIRLINE PART No.	IRC PART No.	
R6	180Ω	½	N-4067	BTS-180	
R7	33Ω	½	N-4022		
R8	2200Ω	½	N-4896	BTS-2200	

♦ Items R5A, R5B, C5A, C5B, C5C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.5KΩ	3.7Ω	255Ω	.6Ω	Part of Speaker	A-3332 ①	A-3025①	RO-2 ①	S-1X ①	① Bend mtg. tabs down, file out slots mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.7Ω	N-7824	ST-113 Mod. P4-X	4A07 ①	① Remount output transformer.

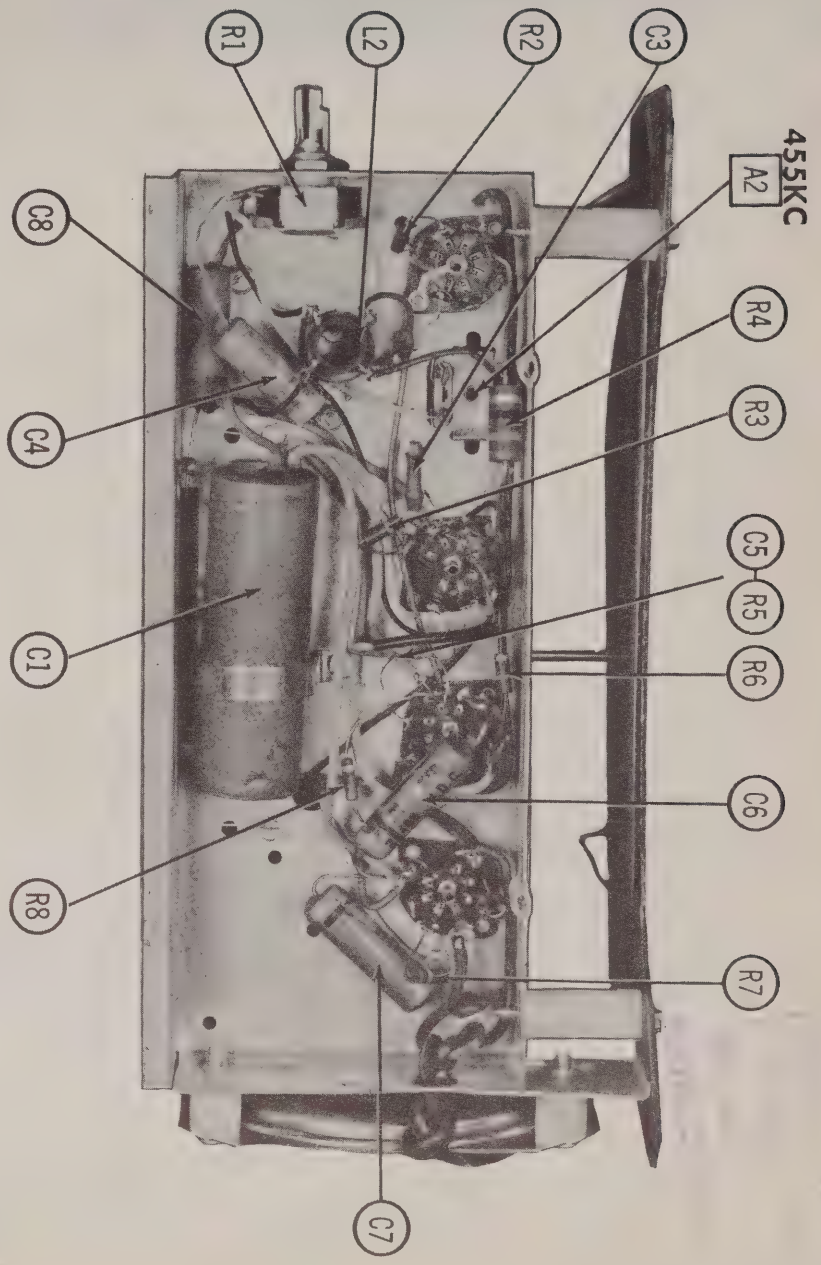
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	AIRLINE PART No.	MERIT PART No.	IRC PART No.	
L1	Loop Ant.	.4Ω	1.6Ω	N-8657			
L2	Osc. Coil	1Ω	7.5Ω	N-8681			Feedback Winding-4Ω
L3	IF Trans.	30Ω	30Ω	N-7694			Pri. Tap @ 28Ω

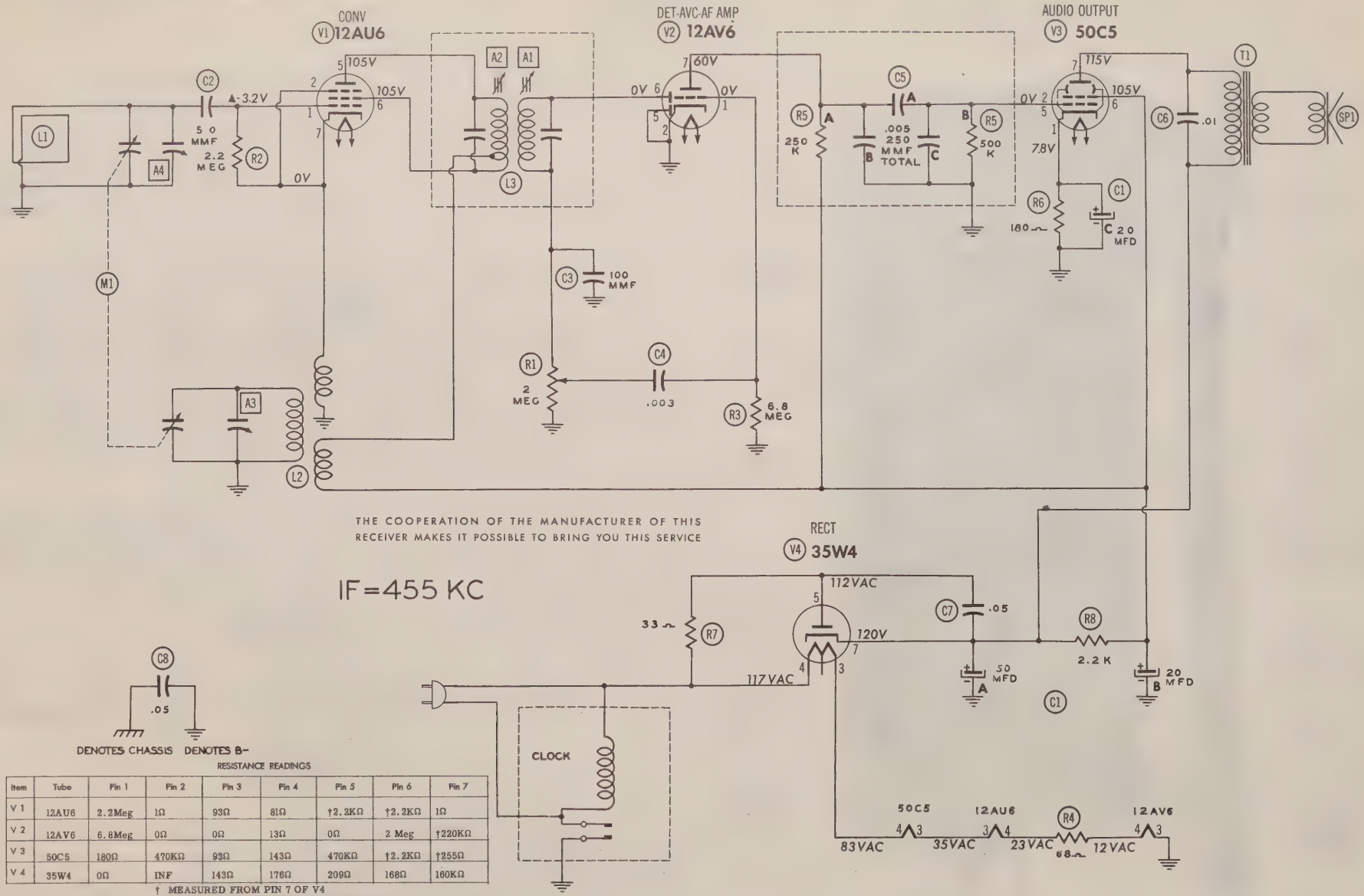
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M1	Tuning Capacitor	N-8675	(16-435MMF, 12-178MMF)
	Clock	N-8663	
	Cabinet	360	White
	Cabinet	367	Yellow
	Knob	N-8665	Tuning (White)
	Knob	N-8712	Volume (White)
	Knob	N-8711	Tuning (Yellow)
	Knob	N-8713	Volume (Yellow)
	Knob	N-8664	Clock (Gray) (2Used)
	Escutcheon	N-8662	Clock

CHASSIS—BOTTOM VIEW



AIRLINE MODEL 25GSL-1560A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AU6	2.2Meg	1Ω	93Ω	81Ω	†2.2KΩ	†2.2KΩ	1Ω
V 2	12AV6	6.8Meg	0Ω	0Ω	13Ω	0Ω	2 Meg	†220KΩ
V 3	50C5	180Ω	470KΩ	93Ω	143Ω	470KΩ	†2.2KΩ	†255Ω
V 4	35W4	0Ω	INF	143Ω	176Ω	209Ω	168Ω	160KΩ

† MEASURED FROM PIN 7 OF V4
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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189-2

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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MODEL 7218CM

ARVIN MODELS
7210CM, CR, 7214CM, 7218CB, CM (Ch. 337-1)

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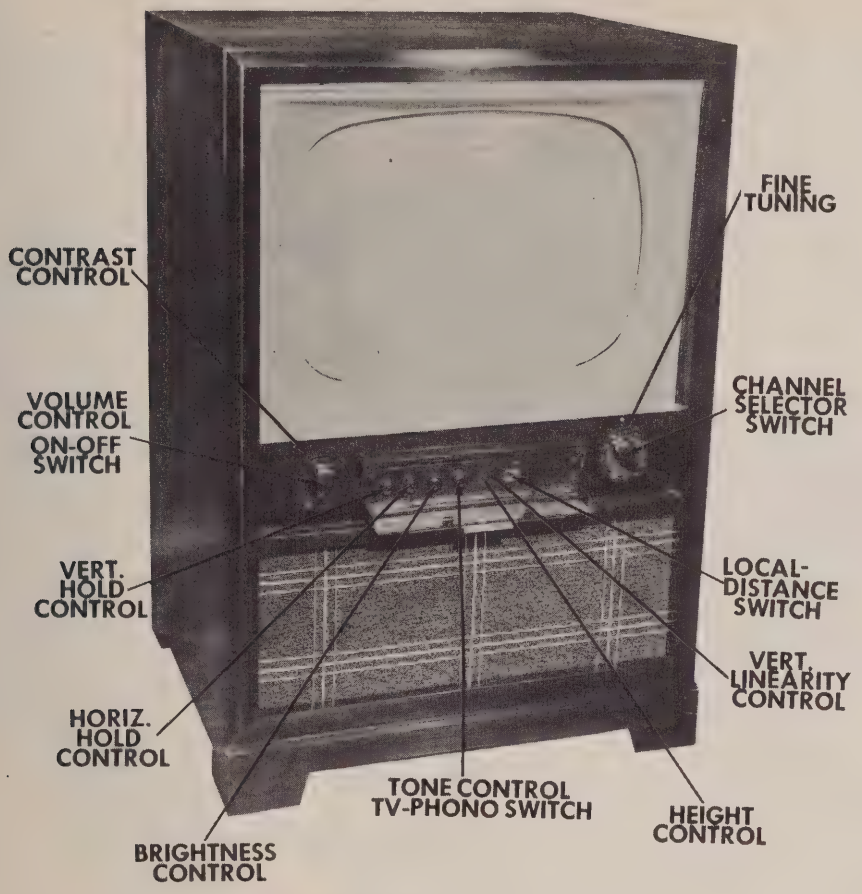

ARVIN MODEL 7218CM

TRADE NAME	Arvin Models 7210CM 7210CR, 7214CM, 7218CB, 7218CM (Ch. 337-1)
MANUFACTURER	Arvin Industries, Columbus, Indiana
TYPE SET	Television Receiver
TUBES	Twenty-six
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2.4 Amp. @ 117 Volts AC
TUNING RANGE-	Channels 2 thru 13

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ARVIN MODELS
7210CM, CR, 7214CM, 7218CB, CM (Ch. 337-1)

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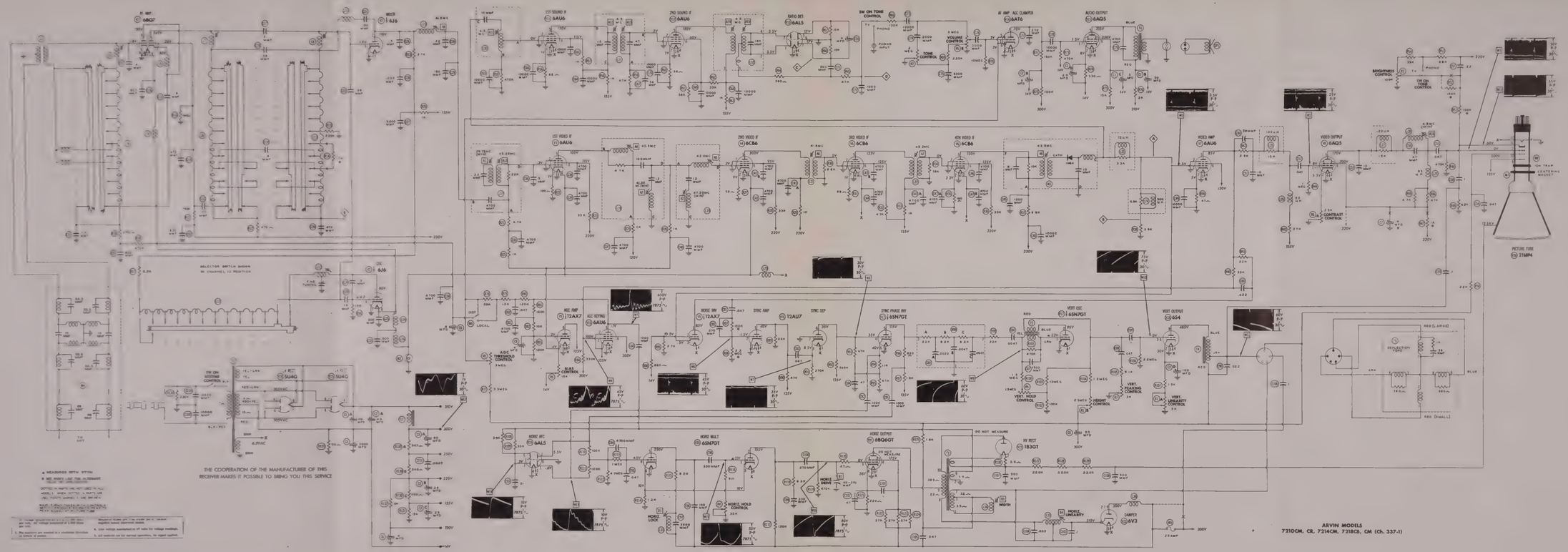
R. F. AMP 6BQ7
MIXER 1/6J6
OSC 6J6
1ST SOUND IF 6AU6
2ND SOUND IF 6AU6
RATIO DET 6AL5
SW. ON TONE CONTROL
AF AMP AGC CLAMPER 6AT6
AUDIO OUTPUT 6AQ5
1ST VIDEO IF 6AU6
2ND VIDEO IF 6CB6
3RD VIDEO IF 6CB6
4TH VIDEO IF 6CB6
VIDEO AMP 6AU6
VIDEO OUTPUT 6AQ5
PICTURE TUBE 21MP4
BRIGHTNESS CONTROL
CONTRAST CONTROL
ON TRAP CENTERING MAGNET
SELECTOR SWITCH SHOWN IN CHANNEL 12 POSITION
FINE TUNING
AGC AMP 12AX7
AGC KEYING 6AU6
AGC THRESHOLD CONTROL
BIAS CONTROL
NOISE INV. 12AX7
SYNC AMP 12AU7
SYNC SEP 12AU7
SYNC PHASE INV 6SN7GT
VERT OSC 6SN7GT
VERT OUTPUT 6S4
VERT HOLD CONTROL
VERT HEIGHT CONTROL
VERT LINEARITY CONTROL
NOISE AFC 6AL5
NOISE MULT 6SN7GT
NOISE OUTPUT 6BQ6GT
HORIZ. HOLD CONTROL
HORIZ LOCK
HORIZ DRIVE
HORIZ LINEARITY
DO NOT MEASURE
HV RECT 1B3GT
WIDTH
DAMPER 6V3
DEFLECTION YOKE
RED (LARGE)
RED (SMALL)
BLUE
GRN
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
ARVIN MODELS 7210CM, CR, 7214CM, 7218CB, CM (Ch. 337-1)
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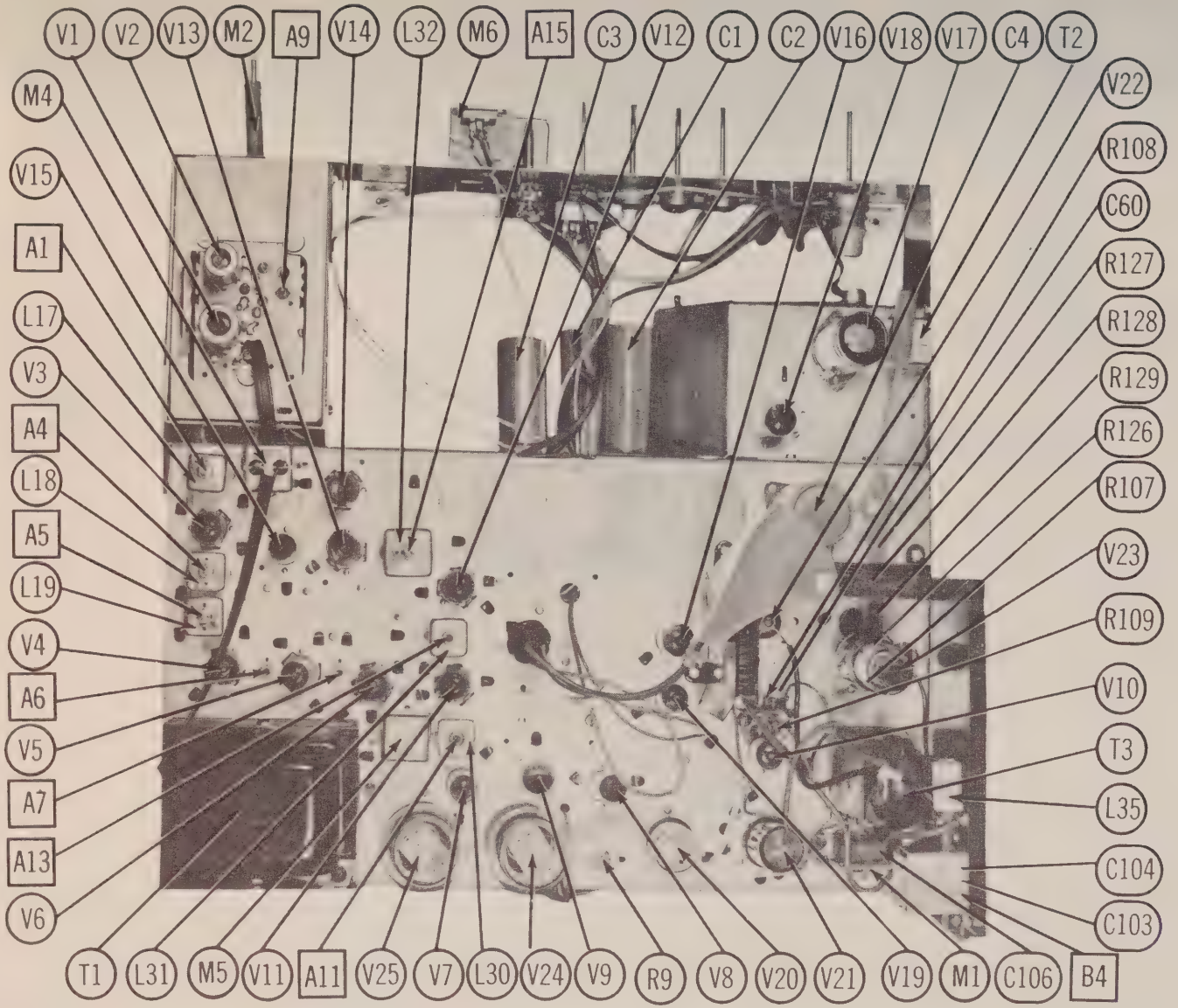

CHASSIS TOP VIEW

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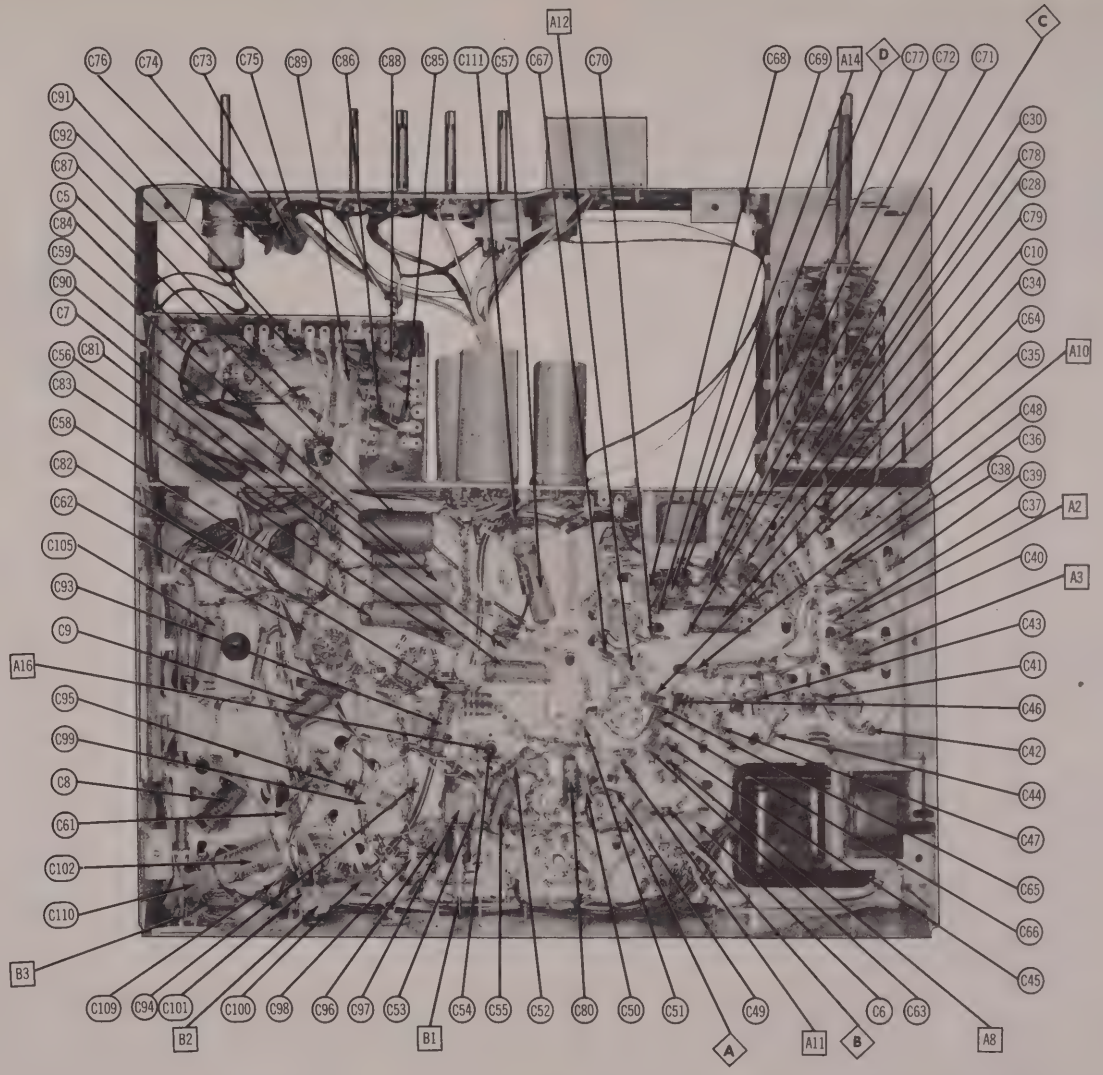
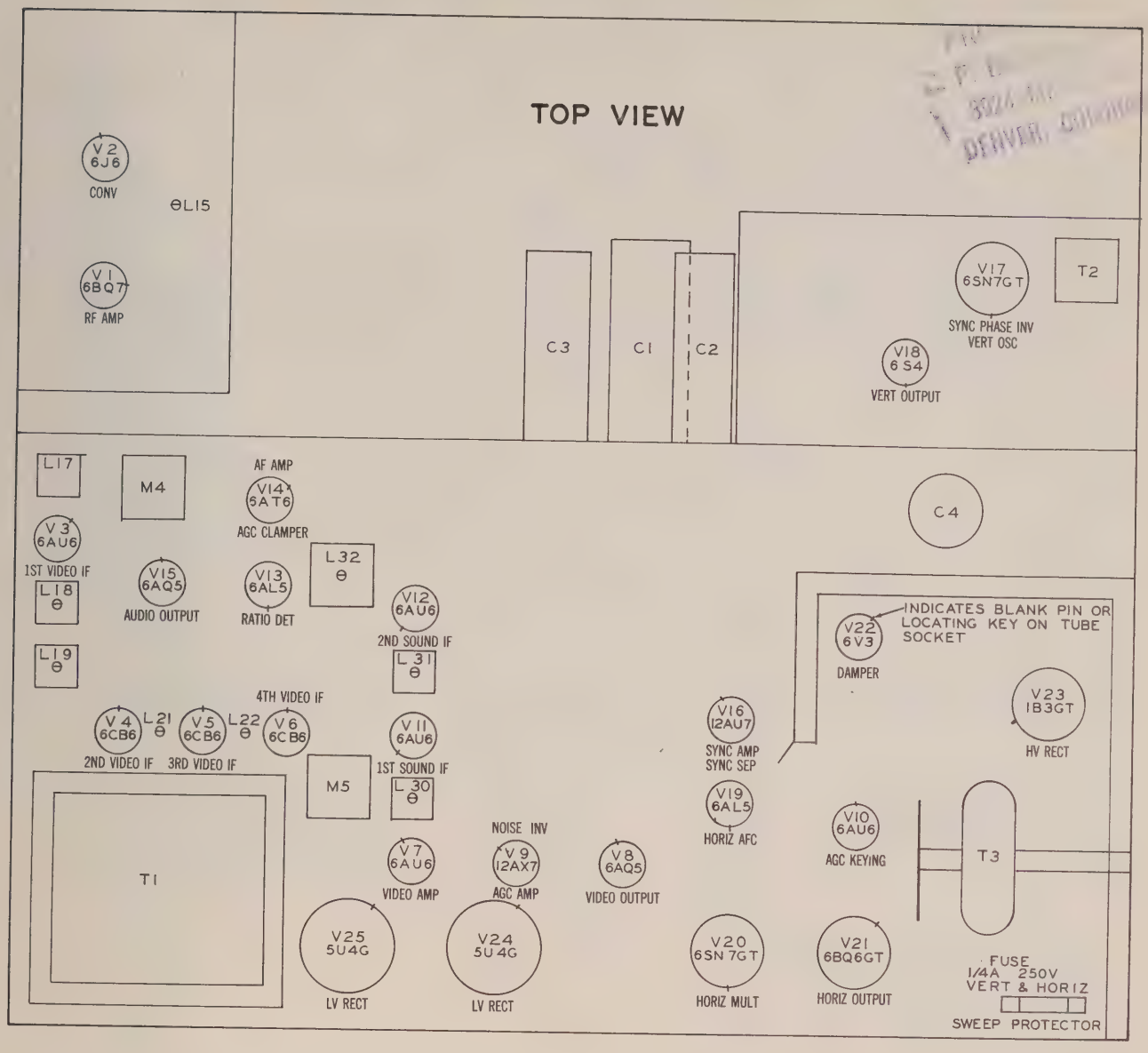


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V24, V25

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V8, V9, V26
Has pic, no sound - V11, V12, V13, V14, V15
Overloaded picture - V9, V10

SYNC FAILURE
No Vert. sync - V17
No horiz. sync - V17, V19, V20
No vert. or horiz. sync - V16, V17

SWEEP FAILURE
No raster, has sound - V20, V21, V22, V23, V26 Fuse (M1)
No vertical deflection - V18
Poor vert. linearity or foldover - V17, V18
Poor horiz. linearity or foldover - V20, V21, V22
Narrow picture - V20, V21, V22, V23, V24, V25
Vert. off freq. - V17
Horiz. off freq. - V17, V19, V20

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube (V20).

AGC ADJUSTMENTS

Short pin 1 (grid) of V5 to chassis.
Adjust the bias control (R9) to obtain zero volts as measured with a VTVM at pin 8 (Cathode) of V9B.
Remove the short from pin 1 of V5.
Set Local-Distance switch to "Distance" position.
Remove keyed amplifier tube, V10 from its socket.
Connect negative lead of variable bias supply (fig.1), to pin 5 of V10 socket. Connect positive lead to chassis and adjust supply to obtain -7 volts at VTVM connected as above.
Connect VTVM leads across C9 and adjust threshold control for -1.75 volts at VTVM.
Move Local-Distance switch to "Local" position . VTVM should read approximately -4 volts.

VIDEO IF ALIGNMENT

AGC adjustments should be correct before Video IF Alignment is attempted.
Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed.
This will disable the local oscillator and reduce the possibility of erroneous indications.
Leave the keyed amplifier tube (V10) out of its socket.
Adjust bias supply to obtain zero volts as measured with VTVM at pin 8 of V9B. VTVM should be connected through isolating network shown in fig. 2.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	Not Used.	39.75MC (Unmod)	Any non interfering channel.	Use VTVM DC probe thru isolating network (fig. 2) to point (A) Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	"	41.25MC	"	"	A2	"
3.	"	"	"	47.25MC	"	"	A3	"
4.	"	"	"	43.5MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	"	42.0MC	"	"	A5	Adjust for maximum deflection. Check steps 3 and 4.
6.	"	"	"	41.8MC	"	"	A6	Adjust for maximum deflection.
7.	"	"	"	45.3MC	"	"	A7	"
8.	"	"	"	43.5MC	"	"	A8	"
9.	"	"	"	41.8MC	"	"	A9	"
10.	"	"	"	45.25MC	"	"	A10	"
11.	.001MFD	High side to pin 1 (grid) of 6AU6 (V3) . Low side to chassis.	44MC (10MC Swp)	41.25MC 42.25MC 45.75MC 47.25MC	"	Vert. amp of scope thru detector (fig. 3) with the 180Ω resistor from lug A of L21 to the junction of R28 and R29.		Set bias supply to obtain -6Volts on VTVM. at pin 8 of V9B. Check for response similar to fig. 4. If necessary retouch A4 and A5 for desired response.
12.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	"	39.75MC 41.9MC 45.0MC 45.75MC	"	Vert. amp thru detector with 180Ω from lug B of L18 to junction of R24 and R29.		Check for response simular to fig. 5. If necessary retouch A9 and A10 for desired response.
13.	"	"	"	41.25MC 42.25MC 45.0MC 45 75MC	"	Vert amp thru 27KΩ to point (B) Low side to chassis.		Check for response similar to fig. 6. If necessary retouch A6, A7 and A8 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
14.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any non interfering channel.	DC probe to point (C) Common to chassis.	A11, A12, A13, A14	Adjust for maximum deflection.
15.	"	"	"	"	DC probe to point (D) Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

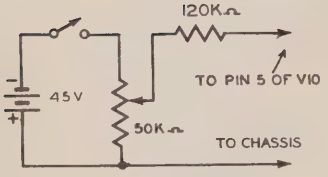


FIG.1

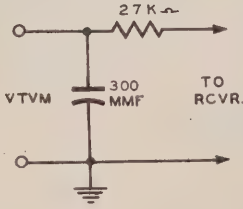


FIG.2

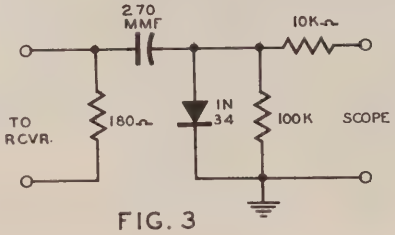


FIG. 3

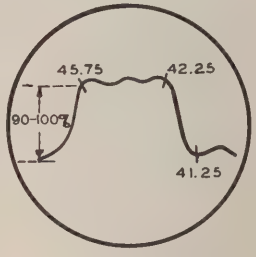


FIG.4

ALIGNMENT INSTRUCTIONS (CONT.)

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non interfering channel.	Vert. amp to point (C) Low side to chassis.	A11, A12, A13, A14	Disconnect stabilizer capacitor C10. Adjust for maximum curve of maximum amplitude and symmetry as in fig. 7.
15.	"	"	"	"	"	Vert. amp to point (D) Low side to chassis.	A15	Reconnect capacitor C10. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 8. SLIGHTLY retouch A14 for maximum amplitudeand straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
16.	100MMF	High side to pin 1 (grid) of 6AQ5 (V8) Low side to chassis.	4.5MC (Unmod)	Any non interfering channel.	DC probe to point (C) Common to chassis.	A16	Connect jumper from junction of C55 and R48 to pin 1 of V12. Adjust for MINIMUM deflection.

RF ALIGNMENT

The tuner portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

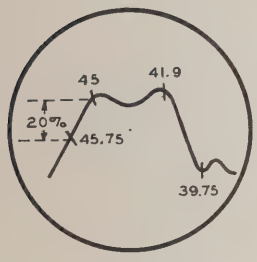


FIG.5

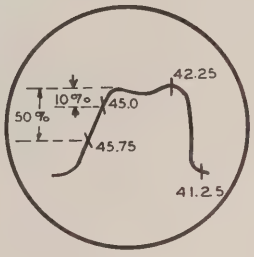


FIG.6

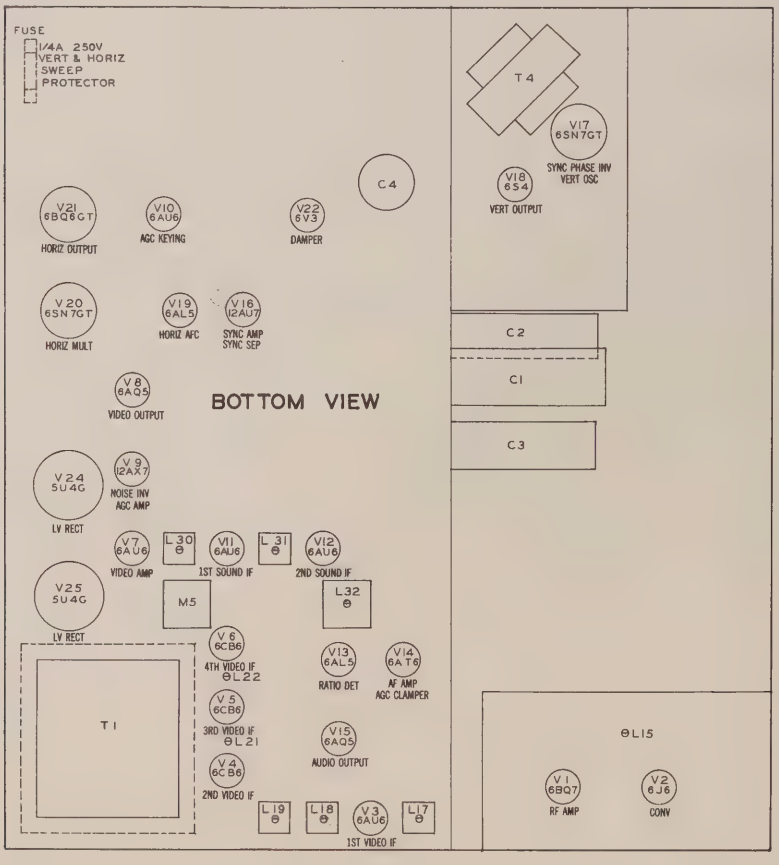
FIG.7

FIG. 8

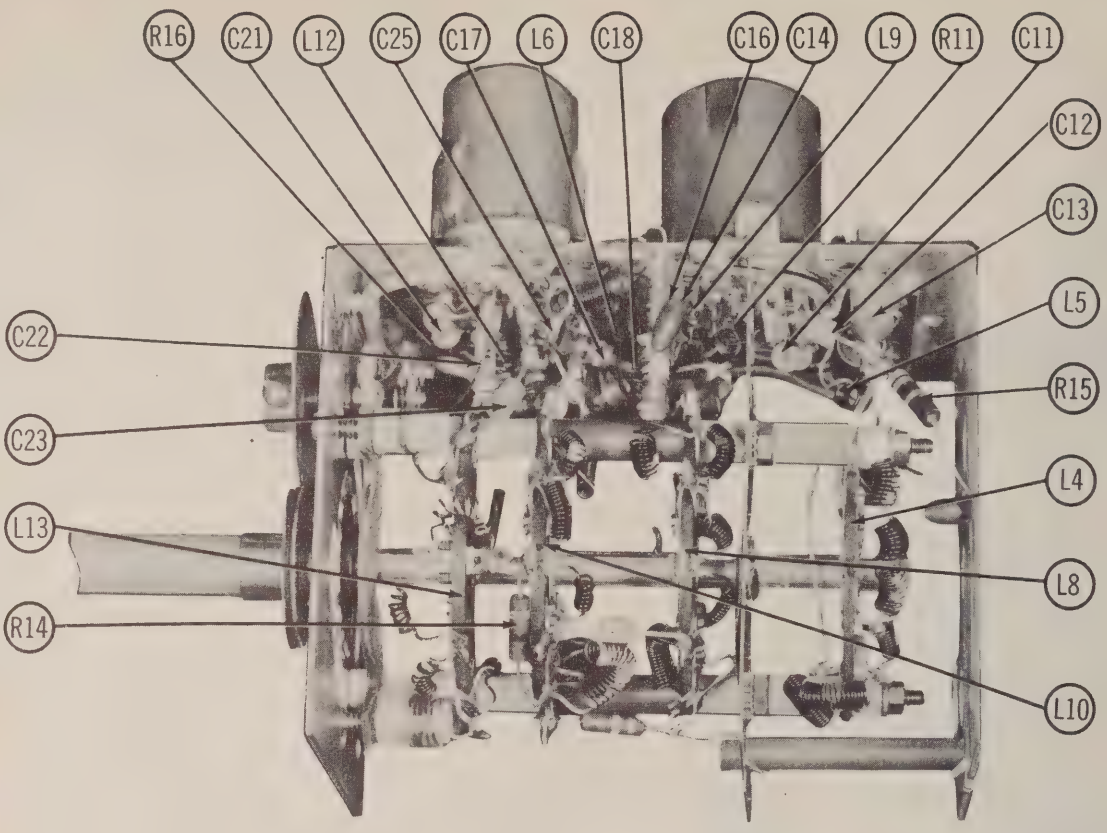
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	†870Ω	†440KΩ	INF	.1Ω	0Ω	INF	800KΩ	0Ω	0Ω
V 2	6J6	†11KΩ	†5.5KΩ	0Ω	.1Ω	220KΩ	15KΩ	0Ω		
V 3	6AU6	13KΩ	0Ω	0Ω	.1Ω	†11.5KΩ	†33.5KΩ	100Ω		
V 4	6CB6	8.3KΩ	56Ω	0Ω	.1Ω	†1.5KΩ	†33.5KΩ	0Ω		
V 5	6CB6	.2Ω	68Ω	.1Ω	0Ω	†2.8KΩ	†6.5KΩ	0Ω		
V 6	6CB6	.2Ω	180Ω	.1Ω	0Ω	†7.3KΩ	†33.5KΩ	0Ω		
V 7	6AU6	3.9KΩ	0Ω	0Ω	.1Ω	†8.4KΩ	†10.5KΩ	47Ω		
V 8	6AQ5	1 Meg	90Ω	.1Ω	0Ω	†4KΩ	†1.5KΩ	1 Meg		
V 9	12AX7	†30KΩ	420Ω	3.9KΩ	.1Ω	.1Ω	†1.8KΩ	120KΩ	7.3KΩ	0Ω
V 10	6AU6	†39KΩ	†1.8KΩ	0Ω	.1Ω	250KΩ	†45Ω	†1.8KΩ		
V 11	6AU6	470KΩ	0Ω	0Ω	.1Ω	†2.8KΩ	†3.8KΩ	82Ω		
V 12	6AU6	47KΩ	0Ω	0Ω	.1Ω	†2.8KΩ	24KΩ	68Ω		
V 13	6AL5	INF	INF	0Ω	.1Ω	10KΩ	0Ω	10KΩ		
V 14	6AT6	10 Meg	0Ω	0Ω	.1Ω	370KΩ	370KΩ	†250KΩ		
V 15	6AQ5	470KΩ	380Ω	0Ω	.1Ω	†2.5KΩ	†15KΩ	470KΩ		
V 16	12AU7	16KΩ	2.2Meg	0Ω	.1Ω	.1Ω	50KΩ	0Ω	270KΩ	0Ω
V 17	6SN7GT	2 Meg	#2 Meg	0Ω	50KΩ	†4.4KΩ	5.8KΩ	.1Ω	0Ω	
V 18	6S4	INF	3.3KΩ	2.2Meg	.1Ω	0Ω	2.2Meg	INF	INF	#3.4KΩ
V 19	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	18KΩ	0Ω	18KΩ		
V 20	6SN7GT	115KΩ	†120KΩ	1.2KΩ	5.7Meg	†8.3KΩ	1.2KΩ	0Ω	.1Ω	
V 21	6BQ6GT	INF	0Ω	INF	†9KΩ	470KΩ	INF	.1Ω	220Ω	Top Cap #28Ω
V 22	6V3	INF	†45Ω	INF	.1Ω	0Ω	INF	†45Ω	INF	Pin 9 †45Ω / Top Cap †300KΩ
V 23	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #413Ω
V 24	5U4G	50Ω	1.1KΩ	INF	13.5Ω	INF	14.2Ω	INF	1.1KΩ	
V 25	5U4G	INF	1.1KΩ	1.1KΩ	13.5Ω	50Ω	14.2Ω	INF	1.1KΩ	
V 26	21MP4	0Ω	470KΩ	Pin 6 †1.8KΩ	Pin 10 #24KΩ	Pin 11 120KΩ	Pin 12 .1Ω			

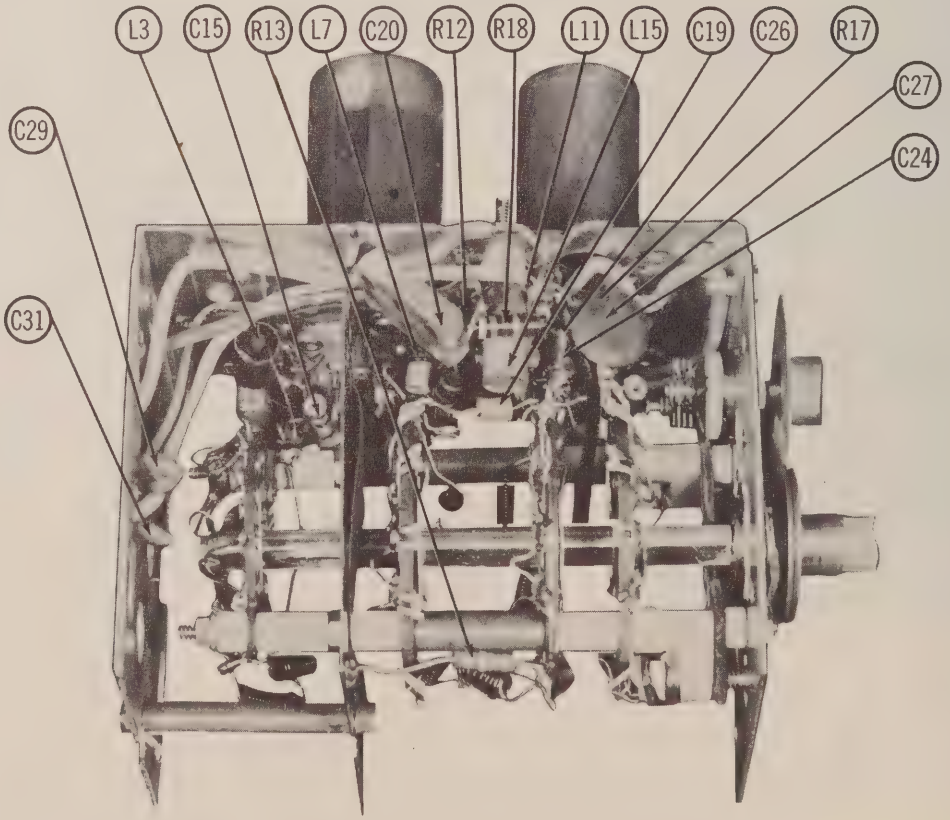
† MEASURED FROM PIN 2 OF V24
# MEASURED FROM TOP CAP, V22
LOCAL-DISTANCE SWITCH IN "LOCAL" POSITION



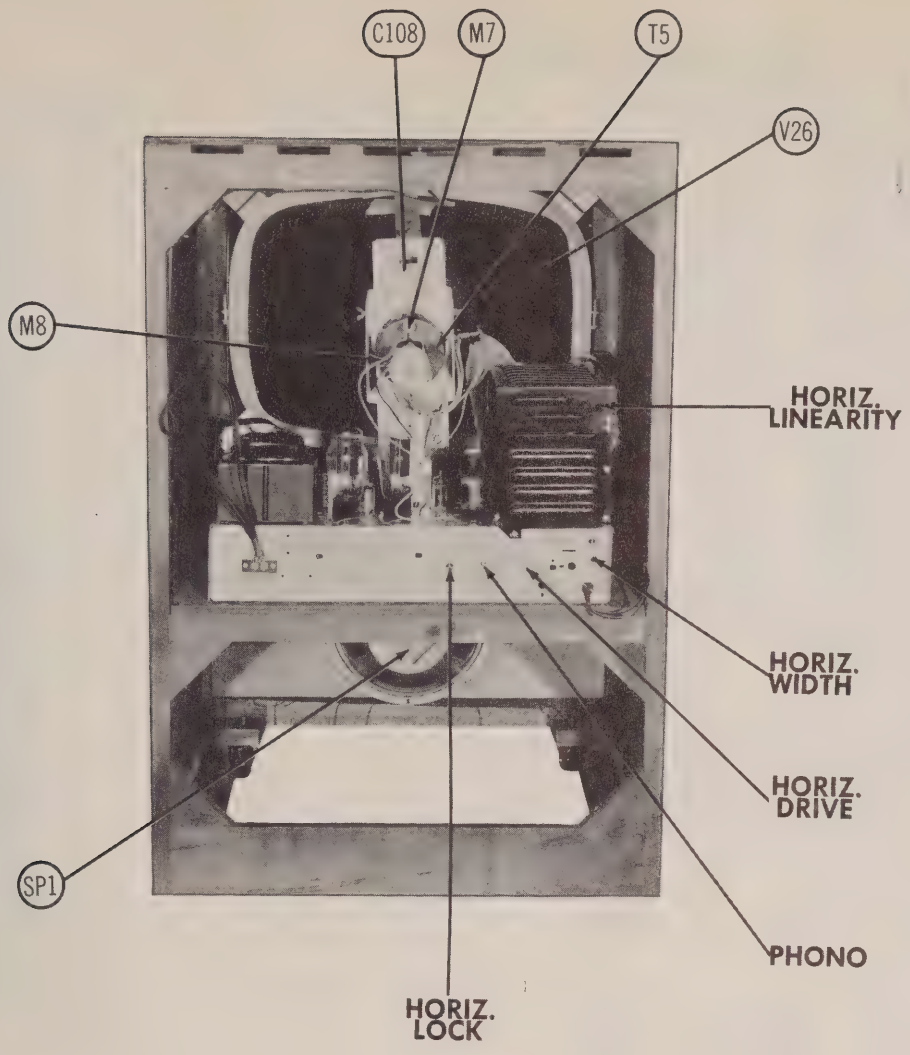
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station preferably a test pattern.

Set the horizontal hold control at the center of its mechanical range and adjust the horizontal lock slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) in a counter clockwise direction as far as possible without the presence of a vertical white line or compression of the center of the picture. If neither of these effects is noted set the trimmer to minimum capacity consistent with satisfactory compression of the trimmer plates.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push on type control knobs from front panel.
2. Remove 6 wood screws and 1 metal screw. Remove rear cover.
3. Disconnect built-in antenna and speaker, yoke socket, H.V. lead and CRT socket.
4. Remove 1 bolt at bottom of yoke support. Remove 6 chassis bolts. Remove chassis.
5. Remove 4 speaker nuts. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J8	6J8	7BF	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	4th Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Amplifier	6AU6	6AU6	7BK	
V8	Video Output	6AQ5	6AQ5	7BZ	
V9	Noise Inverter-Sync Amplifier	12AX7	12AX7	9A	
V10	AGC Keying	6AU6	6AU6	7BK	
V11	1st Sound IF Amp.	6AU6	6AU6	7BK	
V12	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V13	Ratio Detector	6AL5	6AL5	6BT	
V14	AF Amplifier - AGC Clamper	6AT6	6AT6	7BT	
V15	Audio Output	6AQ5	6AQ5	7BZ	
V16	Sync Amplifier-Sync Seperator	12AU7	12AU7	9A	
V17	Sync Phase Inv-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V18	Vert. Output	6B4	6B4	8AC	
V19	Horiz. AFC	6AL5	6AL5	6BT	
V20	Horiz. Mult	6SN7GT	6SN7GT	8BD	
V21	Horiz. Output	6BQ6GT	6BQ6GT	8AM	
V22	Damper	6V3	6V3	8BD	
V23	HV Rectifier	1B3GT	1B3GT	4CG	
V24	LV Rectifier	5U4G	5U4G	5T	
V25	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: SYLVANIA	RTMA BASE TYPE	NOTES
V26	21MP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	⊕40	450	E32422-18	AFH4-54		UPT4440-V3		FP431.4	TVL-4745	
B	⊕50	450								
C	⊕5	450								
D	20	25								
C2A	⊕40	450	E22422-18	AFH1-52		UPT4045		FP146	TVL-1725	
B	⊕5	450		PR340/40		BR445		TC70	TVA-1702	
C3A	⊕60	350	E22422-17	AFH3-45		UPT62245		FP391.1	TVL-3789	
B	⊕25	350		PR850/100		BRH501		TC3501	TVA-1310	
C	⊕35	350								
D	100	50								
C4	3000	15	E22422-12	AFH1-04		UP3M-15		WP042	TVL-1170	
C5	20	450	A28452	PR340/20		BR3045A		TC75	TVA-1709	
C6	4	300	A23714	PR3350/4		BR435		TC60	TVA-1601	
C7	4	300	A23714	PR3350/4		BR435		TC60	TVA-1601	Note 1
C8	4	150	A25453	PR3150/4		BR415		TC40	TVA-1402	
C9	4	150	A25453	PR3150/4		BR415		TC40	TVA-1402	
C10	4	150	A25453	PR3150/4		BR415		TC40	TVA-1402	
C11	4						N330K-040			
C12	1.8									
C13	7.5									
C14	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C15	100									
C16	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C17	.8									
C18	.56									
C19	1.6									
C20	470			SI470	D6-470		GP2K-471	UC-5347	5GA-T47	
C21	100			SI100	D6-101	TM5T1	GP1K-101	SC-531	5GA-T1	
C22	.39									
C23	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C24	1.5						N330K-1R5			
C25	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C26	15				TCZ-15		MP0K-150		5TCC-Q15	
C27	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C28	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29	150			SI150	D6-151	TM5T15	GP2K-151	UC-5316	5GA-T15	
C30	22						N220K-220			
C31	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C32	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C33	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C34	4700		D40053-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C35	4700		D40053-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C36	5		C30205-9	SI5NP0	TCZ-4.7		MP0K-050	ZT-555	5TCCB-V47	
C37	4700		D40053-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C38	4700		D40053-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C39	4700		D40053-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C40	4700		D40053-472	BPD-005	DD-503	TM5D5	811-005	DC-525	5HK-D47	
C41A	4700		D40055-1	BPD-005	DD-2-502	TM5D5	811-005	DC-525	5HK-2D47	
B	4700			BPD-005		TM5D5	811-005	DC-525		
C	4700		D40053-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C42	4700		D40055-1	BPD-005	DD-2-502	TM5D5	811-005	DC-525	5HK-2D47	
C43A	4700			BPD-005		TM5D5	811-005	DC-525		
B	4700			BPD-005		TM5D5	811-005	DC-525		
C44	4700		D40053-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C45	1500		A40096							
C46	4700		D40053-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C47A	4700		D40055-1	BPD-005	DD-2-502	TM5D5	811-005	DC-525	5HK-2D47	
B	4700			BPD-005		TM5D5	811-005	DC-525		
C48	10000		D40053-103	BPD-01	DD-103	TM5D1	821-01	DC-511	5HK-B1	
C49	10000		D40053-103	BPD-01	DD-103	TM5D1	821-01	DC-511	5HK-B1	
C50	56	500	C30411-560							
C51	10	500	C30290-100	1469-00001		5R5Q1		MCB215	MB-41	
C52	.047	400	D25462-473	P488-047	DF-503	PTE4847		PT4147	4TM-S47	
C53	10	500	C30290-100	1469-00001		5R5Q1		MCB215	MB-41	

Note 1. Not used in all Models.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C54	47						NP0L-470	ZT-5447	5TCC-Q47	
C55	.047	400	D25462-473	P488-047	DF-503	PTE4847		PT4147	4TM-S47	
C56	.047	400	D25461-473	P688-047	DF-503	PTE 6347		PT6147	6TM-S47	
C57	.22	400	D25462-224	P488-22		PTE4P22		PT4025	4TM-S22	
C58	.1	900	D25461-104	P688-1	DF-104	PTE 691		PT601	6TM-P1	
C59	.1	1000	D25470-104	P1088-1		PTE16P1		PT1601	MB-P1	
C60	1000	1000	D40108-102					MCE2K10		
C61	4700		D40053-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C62	.047	200	D25455-473	P288-047	DF-503	PTE4847		PT4147	2TM-S47	
C63	10000		D40053-103	BPD-01	DD-103	TM5B1	821-01	DC-511	5HK-B1	
C64	10000		D40053-103	BPD-01	DD-103	TM5B1	821-01	DC-511	5HK-B1	
C65	10000		D40053-103	BPD-01	DD-103	TM5B1	821-01	DC-511	5HK-B1	
C66	10000		D40053-103	BPD-01	DD-103	TM5B1	821-01	DC-511	5HK-B1	
C67	56		D25530-15							
C68	10000		D40053-103	BPD-01	DD-103	TM5B1	821-01	DC-521	5HK-B1	
C69	10000		D40053-103	BPD-01	DD-103	TM5B1	821-01	DC-521	5HK-B1	
C70	10000		D40053-103	BPD-01	DD-103	TM5B1	821-01	DC-521	5HK-B1	
C71	500	500	C30290-501	1468-00005	D6-501	5W5T5	GP2K-501	MC345	1FM-35	
C72	1000		D40054-102	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C73	10000		D40053-103	BPD-01	DD-103	TM5B1	821-01	DC-511	5HK-B1	
C74	2000		D40054-202	BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C75	3300		D40054-332	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C76	2000		D40054-202	P688-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C77	270	500	C30290-271	1468-00003	D6-271	5W5T3	GP2K-271	MC241	1FM-33	
C78	1000		D40053-103	BPD-01	DD-103	TM5B1	821-01	DC-511	5HK-B1	
C79	4700		D40108-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C80	.022	200	D25455-223	P488-022		PTE4S22		PT4122	4TM-S22	
C81	.047	400	D25462-473	P488-047	DF-503	PTE4847		PT4147	4TM-S47	
C82	.047	600	D25461-473	P688-047	DF-503	PTE6847	GP2K-271	MC241	1FM-33	
C83	.047	600	D25461-473	P688-047	DF-503	PTE6847		PT6147	6TM-S47	
C84	.47	200	D25455-474	P288-47		PJ2P5		PT405	2TM-P47	
C85A	.0022			P688-0022		PTE6D22		PT6222	⊕10C1	
B	.0047		⊕C24186	P688-0047	⊕PC-100	PTK6D47	⊕1405-01	PT6247		
C	.0047			P688-0047		PTE6D47		PT6247		
C86	.0047	500	C30324-472	1464-0005		5DH5D5		MCB3465	MS-35	
C87	1500		D40054-152	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C88	.047	600	D25461-473	P688-047	DF-503	PTE6847		PT6147	6TM-S47	
C89	.1	600	D25461-104	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C90	.022	200	D25455-223	P488-022		PTE4S22		PT4122	4TM-S22	
C91	1000		D40054-102	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C92	1000		D40054-102	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C93	.01	400	D25462-103	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C94	4700		D40054-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C95	.047	200	D25455-473	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C96	100	500	C20290-101	1469-00001		5R5T1		MC B235	MS-31	
C97	3900	500	C20433-392	1464-004		IDR5D4		MCB463	MS-24	
C98	330	500	C30290-331	1469-00035		PTE4P1				
C99	330	500	C20290-331	1469-00035						
C100	270	500	C20290-271	1469-0003		5R5T3		MCB241	MS-33	
C101	.1	400	D25462-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C102	.47	200	D25455-474	P288-47		PJ2P5		PT405	2TM-P47	
C103	.1	600	C20290-214	P688-1		PTE6P1		PT601	6TM-P1	
C104	.033	600	C30356-333	P688-033				PT6133		
C105	.047	800	D25461-473	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C106	.1	400	D25462-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C107	500	30000	A24994	HV20C	TV3-503	MM-C30T5	413-501		3DDK-T5	
C108	500	20000	A24994	HV20C	TV3-503	MM-C20T5	413-501		2DDK-T5	
C109	10000		D40108-103	BPD-01	DD-103	TM5B1	821-01	DC-511	5HK-B1	
C110	10000		D40108-103	BPD-01	DD-103	TM5B1	821-01	DC-511	5HK-B1	
C111	4700		D40053-472	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	

+ Items C85A, C85B, C85C, R98A, R98B, R98C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3000Ω		*32464-46	QT-364 *	RTV-359		UF33L	Vert. Linearity - Panel
B	2.5Meg						UR36A	Height - Rear
R2	2Meg		E22464-19					Tone and TV-Phono Switch
R3A	100KΩ		E22464-18	Q11-128	AC-49-S	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	30KΩ		E32464-45	Q11-121	AC-43-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R4A
R5A	1.5Meg		E22464-29	Q11-136	AC-53-S	AB-75	U-155	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS -3	AK-4	Not Req.	Attach to R5A
R6A	2500Ω		E32464-46	QJ-365 **				Contrast - Panel
B	3Meg							Volume & Sw. Tapped @ 900KΩ - Rear
R7	3000Ω							Vert. Peaking-Wire Wound
R8A	3Meg		E22464-47	Q11-140	AC-85-S	AB-84	SU-59	AGC Threshold
B	Shaft		Not Req.	BQ	FKS-1/4	AK-1	Not Req.	Attach to R8A
R9A	15KΩ		E32464-48	Q11-119	AC-32-S	AB-23	SU-29	Bias
B	Shaft		Not Req.	BQ	FKS-1/4	AK-1	Not Req.	Attach to R9A

* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-112 &P1-114 (Panel) B11-239 & P1-122.

** CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B17-111 & P1-204 (Panel) B18-140X & P1-230 (Rear) & Switch 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	NOTES
R10	1 Meg			BTS-1 Meg	
R11	750KΩ-5%			BTS-750K-5%	
R12	470Ω			BTS-470	
R13	220KΩ				Note 1
R14	10KΩ				
R15	3700Ω			BTS-3700	
R16	15KΩ			BTS-15K	
R17	8300Ω				
R18	4700Ω			BTS-4700	
R19	470KΩ		C20081-474	BTS-470K	
R20	1000Ω		C20061-102	BTS-1000	
R21	4700Ω		C22381-472	BTS-4700	
R22	1000-5%		C22382-101	BTS-100-5%	
R23	33KΩ		C22381-333	BTS-33K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	NOTES
R24	1000Ω		C20061-102	BTS-1000	
R25	1000Ω		C20061-102	BTS-1000	
R26	1000Ω		C22381-102	BTS-1000	
R27	560-5%		C22382-560		
R28	33KΩ		C22381-333	BTS-33K	
R29	1000Ω		C20061-102	BTS-1000	
R30	68000-5%		C22382-683	BTS-6800-5%	
R31	680-5%		C22382-680		
R32	4700Ω		C22381-472	BTS-4700	
R33	1000Ω		C22381-102	BTS-1000	
R34	56KΩ		C22381-563	BTS-56K	
R35	180Ω		C22381-181	BTS-180	
R36	33KΩ		C22381-333	BTS-33K	
R37	6800Ω		C20070-683	BTA-6800	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	NOTES
R38	3900Ω-5%		C22382-392	BTS-3900-5%	
R39	47Ω		C22381-470		
R40	33KΩ		C22381-333	BTS-33K	
R41	22KΩ		C22381-223	BTS-22K	
R42	3900Ω-5%		C22382-392	BTS-3900-5%	
R43	2700Ω-5%		C22382-272	BTS-2700-5%	
R44	1 Meg		C22381-105	BTS-1 Meg	
R45	4700Ω-5%	2	C25467-472	BTD-4700-5%	
R46	4700Ω-5%	2	C25467-472	BTD-4700-5%	
R47	1000Ω	2		BTS-1000	Note 1
R48	470Ω		C22381-474	BTS-470K	
R49	8200Ω		C22381-822	BTS-8200	
R50	22KΩ		C20061-223	BTS-22K	
R51	100KΩ		C20061-104	BTS-100K	Note 2
R52	150KΩ		C20061-154	BTS-150K	Note 1
R53	68KΩ		C22381-683	BTS-68K	
R54	33KΩ		C22381-333	BTS-33K	
R55	470KΩ		C22381-474	BTS-470K	
R56	820-5%		C22382-820	BTS-82-5%	
R57	1000Ω		C20061-102	BTS-1000	
R58	1000Ω		C20061-102	BTS-1000	
R59	47KΩ		C22381-473		
R60	680-5%		C22382-680		
R61	56KΩ		C22381 563	BTS-56K	
R62	33KΩ		C22381-333	BTS-33K	
R63	1000Ω		C20061-102	BTS-1000	
R64	3900-5%		C22382-391	BTS-390-5%	
R65	47KΩ		C22381-473	BTS-47K	
R66	10K-5%		C22382-103	BTS-10K-5%	
R67	10KΩ-5%		C22382-103	BTS-10K-5%	
R68	100KΩ		C20061-104	BTS-100K	
R69	330KΩ		C20061-334	BTS-33K	
R70	10 Meg		C20061-106	BTS-10 Meg	
R71	150KΩ		C20061-154	BTS 150K	
R72	100KΩ		C20061-104	BTS-100K	
R73	470KΩ		C22381-474	BTS-470K	
R74	330Ω		C20070-331	BTA-330	
R75	15KΩ		C22381-153	BTS-15K	
R76	2000Ω	5	C23970-18	1 3/4A-2000	
R77	3.3Meg-5%		C22382-335	BTS-3.3Meg-5%	
R78	33KΩ 5%		C22382-333	BTS-33K-5%	
R79	10KΩ 5%		C22382-103	BTS-10K-5%	
R80	120KΩ-5%		C22382-124	BTS-120K-5%	
R81	120KΩ-5%		C22382-124	BTS-120k-5%	
R82	10KΩ 5%		C22382-103	BTS-10K-5%	
R83	120KΩ-5%		C22382-124	BTS-120K-5%	
R84	330KΩ-5%		C22382-334	BTS-330K-5%	
R85	2700Ω-5%		C22382-272	BTS-2700-5%	
R86	820Ω 5%		C22382-821	BTS 820-5%	
R87	150K		C20061-154	BTS-150K	Note 3
R88	2.2Meg		C22381-225	BTS-2.2Meg	Note 4

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	NOTES
R89	22KΩ	1	C22381 223	BTS-22K	
R90	47KΩ	1	C20070-473	BTA-47K	
R91	270KΩ	1	C22381-274	BTS 270K	
R92	560KΩ	1	C22381-564	BTS 560K	
R93	47KΩ	1	C22381 473	BTS-47K	
R94	11000-5%	1	C22382 412	BTS 1100-5%	
R95	4700Ω	1	C22381-472	BTS 4700	
R96	8200-5%	1	C22382-822	BTS-820-5%	
R97	18000-5%	1	C22382-182	BTS-1800-5%	
R98A	22KΩ			BTS-22K	
B	8200Ω			BTS 8200	
C	8200Ω			BTS 8200	
R99	22KΩ		C22381-223	BTS-22K	
R100	1.5Meg-5%		C22381-155	BTS 1.5Meg-5%	
R101	470KΩ	1	C22381-474	BTS-470K	
R102	100KΩ	1	C22381-104	BTS-100K	
R103	10 Meg	1	C22381-106	BTS-10 Meg	
R104	1.5Meg-5%	1	C22382-155	BTS-1.5Meg-5%	
R105	91000-5%	1	C22382-913	BTS-9100-5%	
R106	2.2Meg	1	C22381-225	BTS-2.2Meg	
R107	1500Ω	1	C20061-152	BTS-1500	
R108	39KΩ	2	C20302-393	BTS-39K	
R109	33KΩ	2	C20302 333	BTS 33K	
R110	100KΩ-5%	1	C22382-104	BTS-100K-5%	
R111	100KΩ-5%	1	C22382-104	BTS-100K 5%	
R112	4.7Meg	1	C22381-475	BTS-4.7Meg	
R113	1 Meg	1	C22381-105	BTS-1 Meg	
R114	1200Ω	1	C22381-122	BTS-1200	
R115	8200Ω	1	C20070-822	BTA-8200	
R116	81KΩ-5%	1	C22382-813	BTS-81K-5%	
R117	120KΩ	1	C22381-124	BTS-120K	
R118	8200Ω	2	C22381-822	BTS-8200	
R119	470KΩ	2	C22382-474	BTS-470K	
R120	470Ω	1	C20061-470		
R121	2300Ω	5	C23970-18	1 3/4A-2325	
R122	27KΩ	2	C20302-273	BTH-27K	
R123	27KΩ	2	C20302 273	BTH-27K	
R124	27KΩ	2	C20302 273	BTH-27K	
R125	1800Ω	2	C20302-182	BTH-1800	
R126	3.9Ω	1	C30502-30		
R127	220KΩ	2	C25228-224		
R128	220KΩ	2	C25228-224		
R129	220KΩ	2	C25228-224		
R130A	34ΩΩ				
B	34ΩΩ	10	C40033		
C	31500Ω				
R131	15KΩ	2	C20302-153	BTH-15K	
R132	10KΩ	2	C20302 103	BTH-10K	
R133	500	5	C23970 6	1 3/4A-50	
R134	220KΩ		C20061-224	BTS-220k	

Note 1. Not used in all models.
Note 2. Some models use a 220KΩ resistor in this application.
Note 3. Some models use a 270KΩ resistor in this application.
Note 4. Some models use 4.7Meg resistor in this application.
* Items R98A, R98B, R98C, C85A, C85B, C85C combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC	610VCT	5VAC	6.3VAC	E-25919			TP-319	
	@ 2.4A	.320ADC	@ 6A	@ 10.3A					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	RATING:	REPLACEMENT DATA: ARVIN PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T2	180Ω	1060Ω		C-22446-1	A-8122 ①	A-4003	TBO-3 ①	A-97Y	Vert. Osc. Trans.
T3	407Ω	35.5Ω tap	SEC. 2	E-40U17	A-8130 ①②	HVO-7 ①	TFB-5① ④	D-14 ①	Horiz. Output Trans.
	tap @	@ 3.5Ω	3.5Ω						
	22Ω		SEC. 3						
			0Ω						
T4	1594.4Ω			C-24990-2	A-8141	A-3039	TSO-12	A-104X	Vert. Output Trans.
	tap @								
	4.4Ω								
T5A	24Ω			D-24807		TY-6	Y-19		Horiz. Deflection Coils
B	46Ω								Vert. Deflection Coils

① Drill one new mounting hole.
② Use with width coil WC-5
③ Use with width coil MWC-1
④ Use width coil (with AGC winding) with approx. range of 4-30 Millihenries
⑤ Use with width coil WC-11

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE	RATING: DC RES PRI.	RATING: DC RES SEC.	REPLACEMENT DATA: ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	5.7KΩ	3.8Ω	478Ω .68Ω	C-24776-4	A-3877 ①	A-3019	RO-9 ①	S-5X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V C	RATINGS: IMP	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: VIKING PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	10"	PM		3.8Ω	D25519	10J11	10A31	

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.290 A	45.6Ω	1 Hy.	C-22561-3	C-2326 ①	C-2996 ①	TR-1733 ①	C-17X

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	ARVIN PART No.	MERIT PART No.	IRC PART No.	
L2	Ant. Trans.	0Ω	0Ω				
L3	Ant. Coil	0Ω					
L4	Ant. Coils	0Ω					
L5	Neutralizing Coil	0Ω					
L6	Fil. Choke	0Ω		A22456			
L7	RF Coil	0Ω					
L8	RF Coils	0Ω					
L9	Mixer Grid Coil	0Ω					
L10	Mixer Grid Coils	0Ω					
L11	Feedback Coil	1Ω					
L12	Osc. Plate Coil	0Ω					
L13	Osc. Coils	0Ω					
L14	Fil. Choke	0Ω		A22456			
L15	Conv. Plate	.1Ω					
L16	Fil. Choke	.2Ω				CL-1	.56 Microhenries
L17	1st Video IF Grid	0Ω					Includes Trap; Includes 22KΩ Resistor & .0047 Microhenry Cap.
L18	1st Video IF Plate	.1Ω		D40070			Includes Trap & 4.7K Resistor
L19	2nd Video IF Grid	.1Ω		D40071			Includes Trap
L20	Fil. Choke	0Ω		A23095			
L21	3rd. Video IF	.2Ω	.2Ω	D40072			
L22	4th. Video IF	.2Ω	.2Ω	D40072			
L23	Series Peaking Coil	3.7Ω		D25468-11	TV-181*		72 Microhenries; Wound on 3.3KΩ Resistor
L24	Shunt Peaking Coil	11.5Ω		D25468-12	TV188▲		500 Microhenries; Wound on 6.8KΩ Resistor
L25	Series Peaking Coil	5Ω		D25468-13	TV-181■		120 Microhenries; Wound on 15KΩ Resistor
L26	Shunt Peaking Coil	4Ω		D25468-10	TV-181		93 Microhenries
L27	Series Peaking Coil	5Ω		D25468-13	TV-181■		120 Microhenries; Wound on 15KΩ Resistor
L28	4.5MC Trap	1.6Ω		C25609	TV-151		
L29	Shunt Peaking Coil	4Ω		D25468-10	TV-181		93 Microhenries
L30	1st Sound IF	7Ω		D40075			Tapped@ 1.6Ω
L31	2nd Sound IF	5.2Ω	3.2Ω	D40077	TV-113 †		
L32	Ratio Det.	3.4Ω	.2ΩCT	D25322	TV-110		Tertiary Winding - .7Ω
L33	Horiz. Osc.	63Ω		C23448	TV-163		
L34	Width Coil	11Ω		C40098	MWC-2		
L35	Horiz. Lin.	5.7Ω		C40028			Tapped@ 4.3Ω
L36	RF Choke	.72Ω		A40377		CL-1	1.5Microhenry

* Parallel with 3.3K Resistor.
▲ Parallel with 6.8K Resistor.
■ Parallel with 15K Resistor.
† Use Adaptor Plate.

FUSES

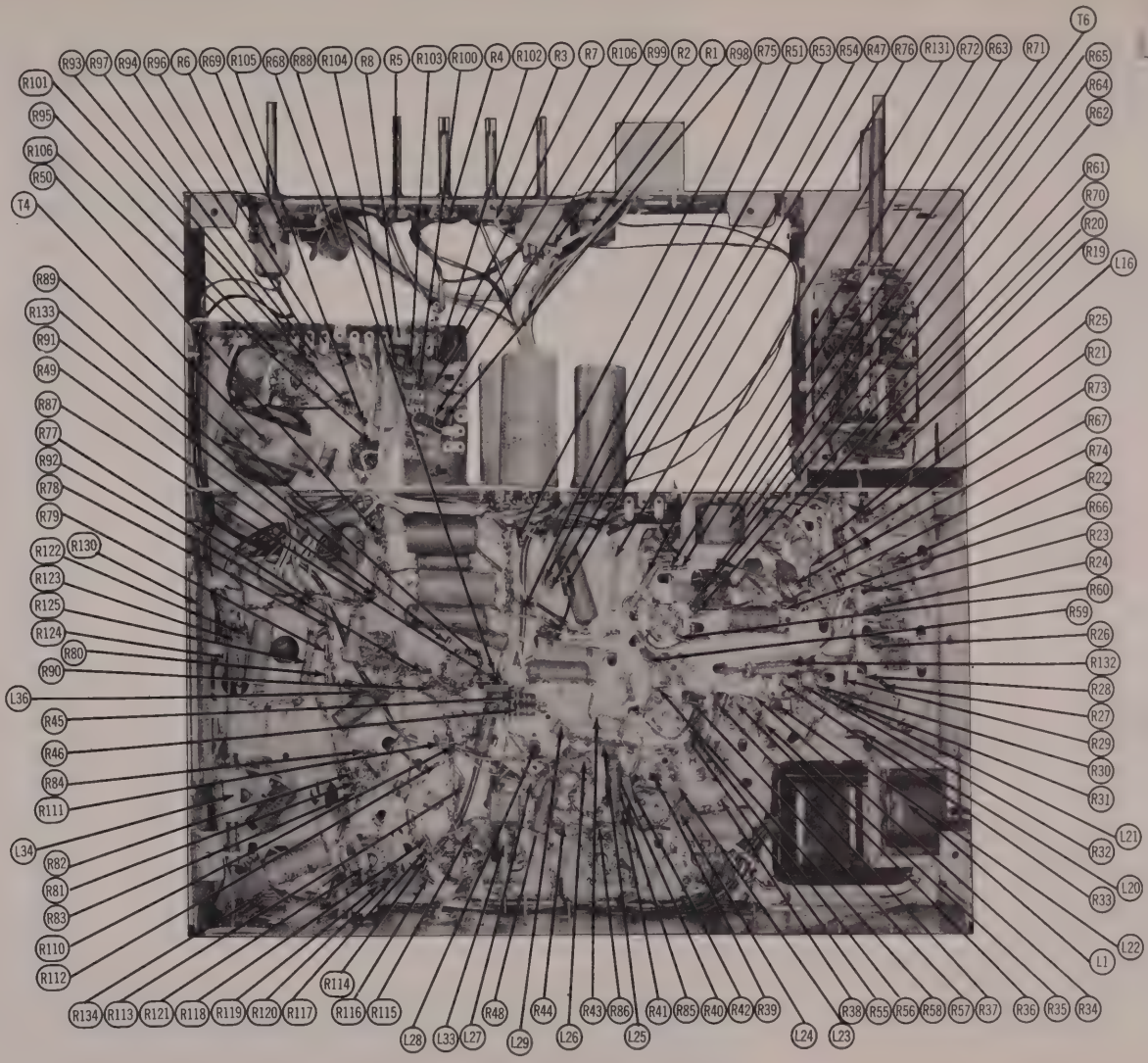
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ARVIN PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG P/T	1/4A 250V	A22493		318.250		GJV-1/4	

DIAL LIGHTS

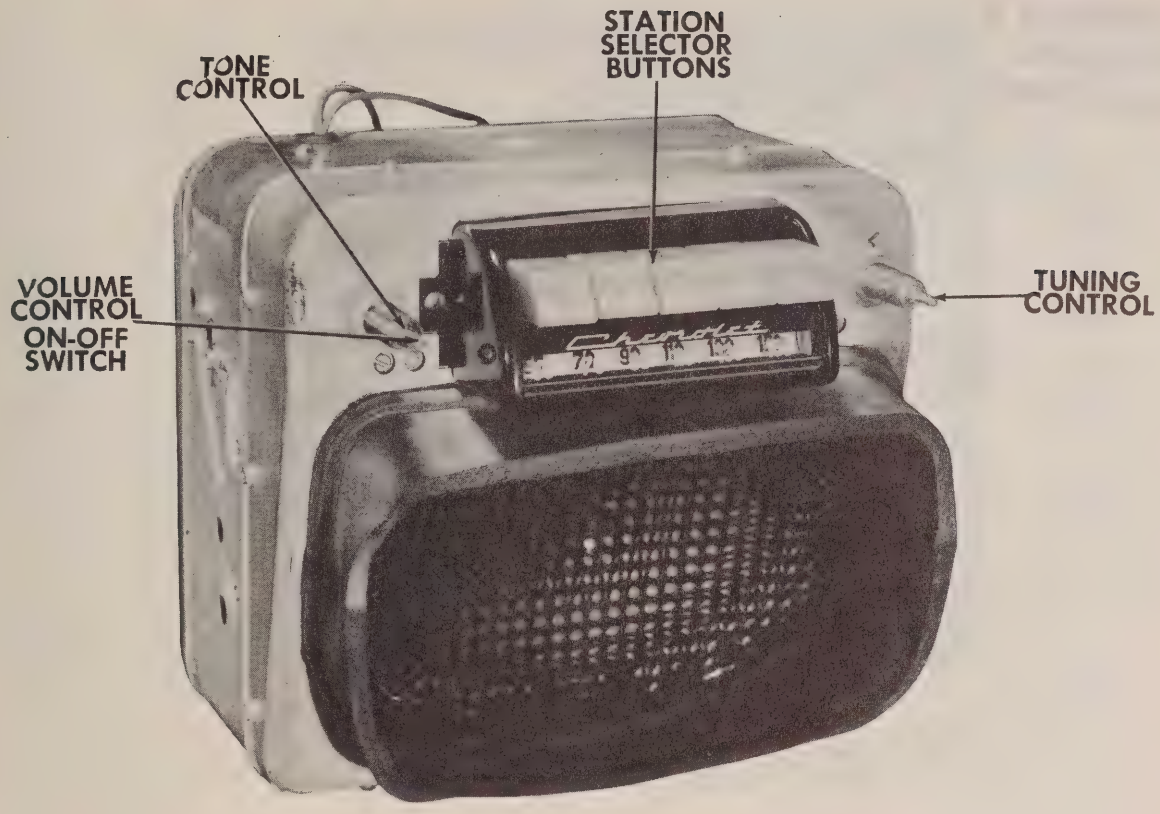
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ARVIN PART No.		
M2	Bayonet	6-8	.15	Brown			Type no. #47

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M3	RF Tuner	E40128-1	
M4	IF FM Trap	C25963	
M5	Video Detector Unit	D40073	Conplete Assembly
M6	Switch	A25525	Local-Distance
M7	Centering Magnet	D25626	
M8	Ion Trap	C25662-1	
B2	Trimmer	A24528	Horiz. Drive (40-370MMF)
	Control Door	AE40082-1	Includes Escutcheon (Mahogany)
	Control Door	AE40082-2	Includes Escutcheon (Blonde)
	Safety Glass	E24947	
	Knob	D40051-1	Channel Selector (Mahogany)
	Knob	D40051-3	Channel Selector (Blonde)
	Knob	D40062-1	Fine Tuning (Mahogany)
	Knob	D40062-3	Fine Tuning (Blonde)
	Knob	D40112-1	Off/On Volume (Mahogany)
	Knob	D40112-3	Off/On Volume (Blonde)
	Knob	C25735-1	Contrast (Mahogany)
	Knob	C25735-3	Contrast (Blonde)
	Knob	C24699-4	4 used
	Mask	R40382	Plastic
	Back Cover	AE25495-1	Model 7214CM
	Back Cover	AE25495-3	



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CHEVROLET
MODEL 986443

CHEVROLET
MODEL 986443

TRADE NAME	Chevrolet Model 986443 (For 1950, 1951, 1952 Chevrolet Trucks)
SUPPLIER	Chevrolet Motors, Div. of General Motors, Detroit, Mich.
TYPE SET	Battery Operated Custom Built Automobile Superheterodyne Receiver
TUBES (Six)	Types 6SK7 RF Amp., 6SA7 Conv., 6SK7 IF Amp., 6SQ7 Det.-AVC-AF Amp., 6V6GT Audio Output, 0Z4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	550-1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (grid) of 6SA7 (V2). Low side to chassis.	260 KC (400~ Mod)	Tune to high frequency stop.	Across voice coil	A1, A2 A3, A4	Adjust for maximum output.
2.	68MMF	High side thru 68MMF to antenna input. Low side to chassis.	1615KC	"	"	A5, A6 A7	Check setting of oscillator core (middle core of slug assembly). End of core should be 1 25/32 inch from mounting end of coil form. Adjust A5, A6 and A7 in order given, for maximum output.
3.	"	"	1000 KC	Tune to 1000 KC signal	"	A8, A9	Adjust cores for maximum output.
4.	"	"	1615 KC	Tune to high frequency stop	"		Retouch A6 and A7 for maximum output.

Tune to 1000KC signal and adjust the pointer adjustment screw so the pointer is aligned with the 1100 KC mark. This is the compensation necessary for correct pointer alignment when installed.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Chevrolet PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	5229	6SK7	8N	
V2	Converter	5222	6SA7	8R	
V3	IF Amplifier	5229	6SK7	8N	
V4	Det-AVC-AF Amp.	5232	6SQ7	8Q	
V5	Audio Output	5241	6V6GT	7S	
V6	Rectifier	5003	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: Chevrolet PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■20	400	M908	E3C152		UP2245C		FP345.8	TVL-3678	
B	▲20	400								
C	20	25								
C2	.05	400	E503	P488-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	68	500	G680	1469-00007		5R5Q7			MS-47	
C4	39	500	G390	1469-00004		5R5Q4		MCB223	MS-44	
C5	180		7257424							
C6	.05	200	E503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C7	.005	600	E502	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C8	100		BPD-0001		D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	Note 1
C9	.001	600	E102	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C10	.05	400	E503	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C11	.002	600	E202	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C12	.005	600	E502	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C13	.004	600	H402	P688-004	D6-402	PTE6D4	GP2-333-402	PT624	6TM-D4	
C14	.006	1600	H602	P1688-006		PTE16D6		PT1626	MB-D6	

Note 1. Some Models use chassis plate in this application (part #1217848)

CONTROLS

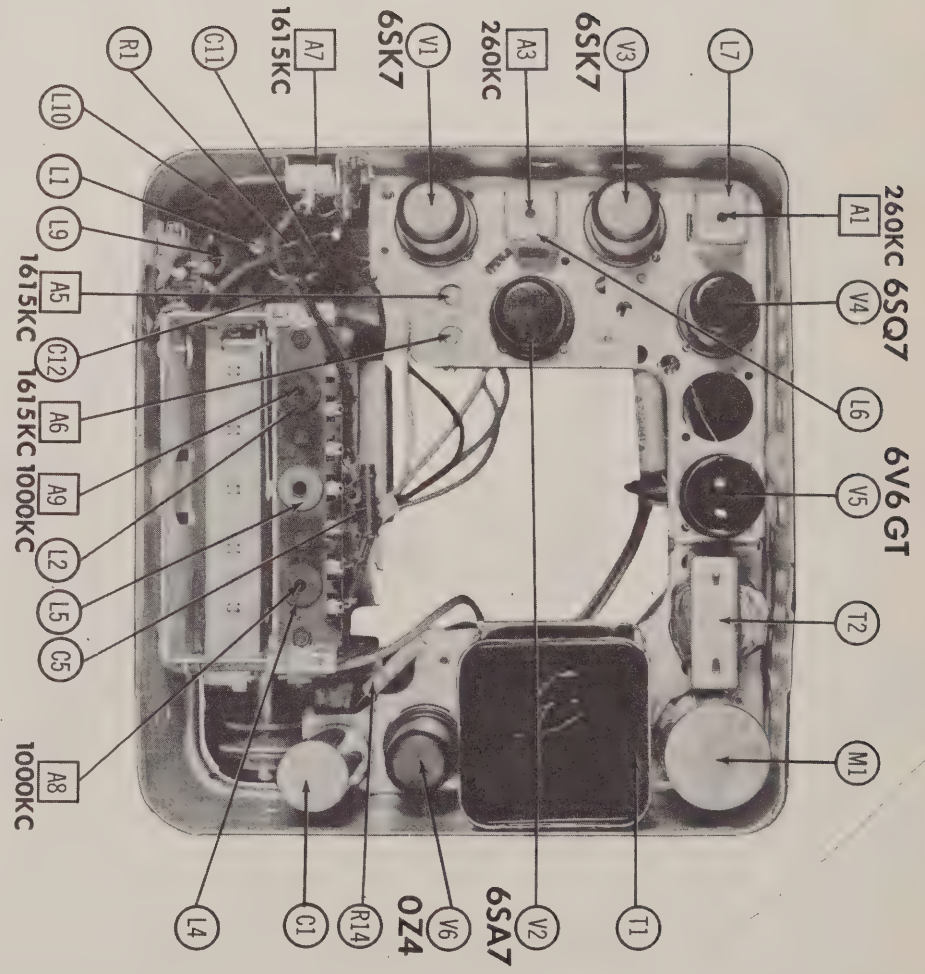
ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Chevrolet PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	300KΩ	½	7256188					Tone Switch, Volume & Switch Sensitivity -Wire Wound
R2	1000Ω	1	7242204					

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: Chevrolet PART No.	IRC PART No.	NOTES
R3	220Ω	½	A221	BTS-220	
R4	15KΩ	1	B153	BTA-15K	
R5	15KΩ	2	C153	BTB-15K	
R6	2.2Meg	½	A225	BTS-2.2Meg	
R7	330KΩ	½	A334	BTS-330K	
R8	22KΩ	½	A223	BTS-22K	
R9	1 Meg	½	A105	BTS-1 Meg	
R10	47KΩ	½	A473	BTS-47K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: Chevrolet PART No.	IRC PART No.	NOTES
R11	6.8Meg	½	A685	BTS-6.8Meg	
R12	220KΩ	½	A224	BTS-220K	
R13	220KΩ	½	A224	BTS-220K	
R14	330Ω	2	C331	BTB-330	
R15	1 Meg	½	A105	BTS-1 Meg	
R16	1800Ω	2	C272	BW-2-1800	
R17	220Ω	1	B221	BTA-220	

CHASSIS—TOP VIEW



TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	Chevrolet PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3V @ 6A	650VCT .090ADC			7255881				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Chevrolet PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	5.5KΩ	4.3Ω	370Ω	.4Ω	7256009	A-3849 ①	A-3019 ①	RO-9 ①	S-5X ①	① Fabricate new mounting.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Chevrolet PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"X 9"	PM	4.3Ω	6111	ST-810 Mod. P69-V	69A2	

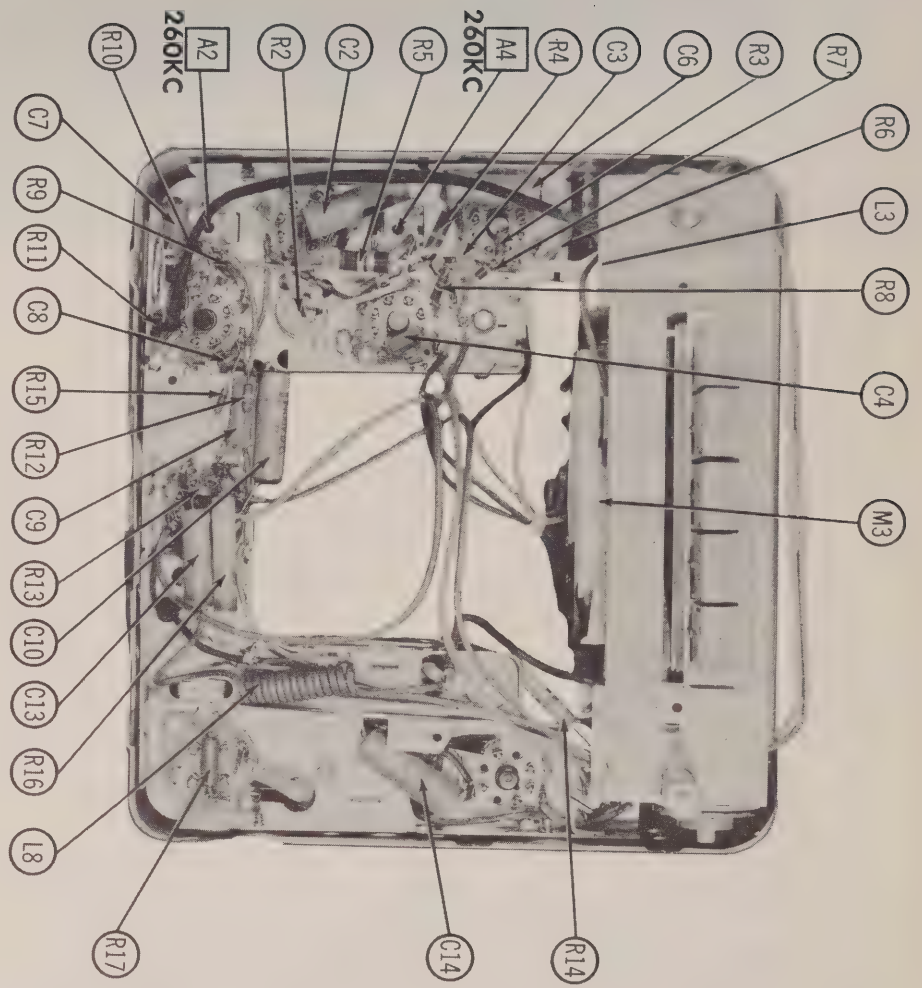
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	Chevrolet PART No.	MERIT PART No.	IRC PART No.	
L1	Ant. Loading Coil	.6Ω		7255738			
L2	Ant. Coil	9.5Ω		7258914			
L3	RF Choke	4.8Ω		7240251			
L4	RF Coil	9.5Ω		7258914			
L5	Osc. Coil	1Ω	4.4Ω	7258911			
L6	Input IF	30Ω	30Ω	1218725	BC-350		
L7	Output IF	30Ω	30Ω	1218726	BC-354		
L8	Fil. Choke	0Ω		7255912			
L9	Spark Choke	0Ω		1217846			
L10	Hash Choke	0Ω		1217846			

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				Chevrolet PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115∿	8542	5300	859	5300	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Chevrolet PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A 32V	147685	1217950	307014	157014	SFE-14	HD1

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Chevrolet PART No.		
M3	Bayonet	6-8	.4	White	55		Type #55

MISCELLANEOUS

ITEM No.	PART NAME	Chevrolet PART No.	NOTES
M4	Tuning Unit		Complete
M5	Spark Plate	1217848	
M6	Spark Plate	1219869	2 Section
A7	Trimmer	7257959	Antenna (Includes bracket)
A5, A6	Trimmer	7242454	Dual (RF & Osc.)
	Knob	7256148	Tuning & Off/On Volume
	Knob	7255935	Dummy
	Knob	7255936	Wing Type (Tone)
	Pointer Assembly	7256175	

PUSHBUTTON ADJUSTMENT

Loosen button by pulling slightly to left and all the way out.

Tune manually to exact center of station signal and push button all the way in.

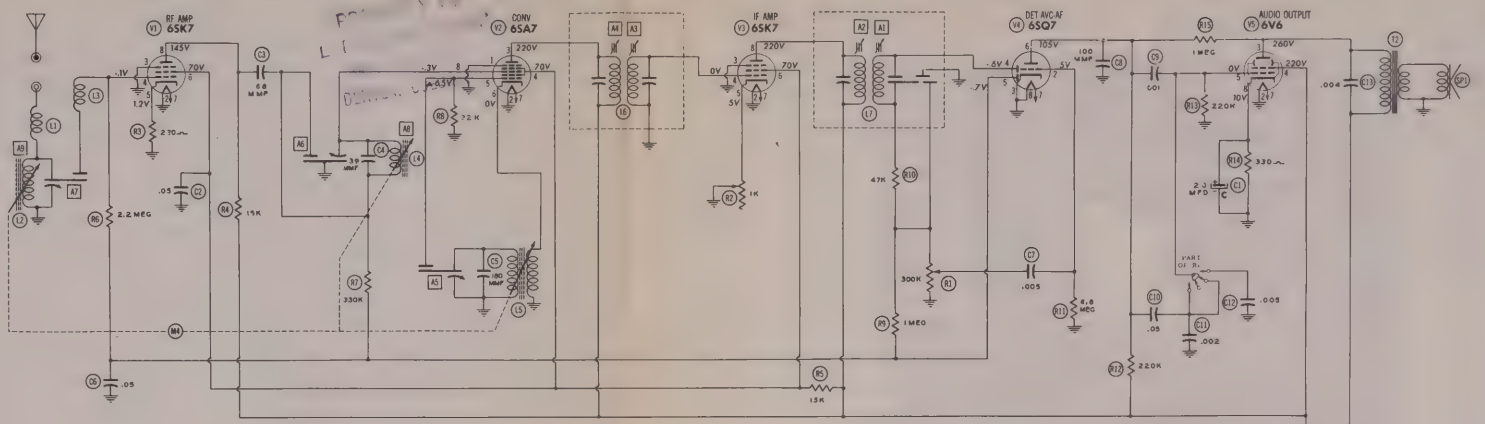
Check to see that push button is set accurately.

Repeat above procedure for remaining buttons.

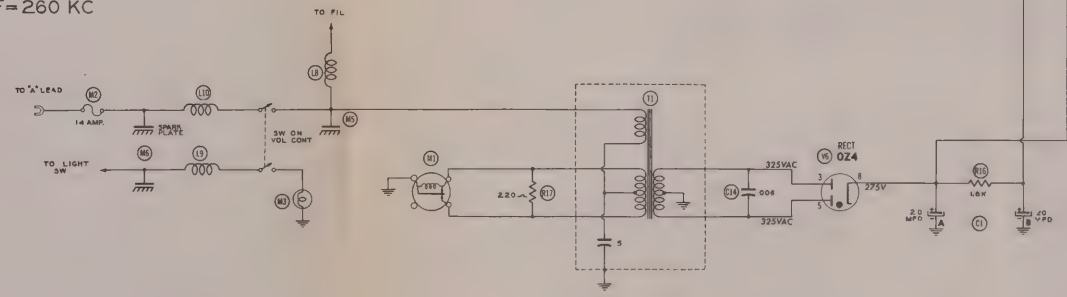
SENSITIVITY CONTROL ADJUSTMENT

Have receiver in operation and connect a VTVM across the Sensitivity Control (R2).

Adjust for 1.6 volts reading on VTVM.


V1 RF AMP 6SK7
V2 CONV 6SA7
V3 IF AMP 6SK7
V4 DET AVC AF 6SQ7
V5 AUDIO OUTPUT 6V6
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 260 KC



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7	0Ω	0Ω	0Ω	3.5Meg	220Ω	†16KΩ	.6Ω	†16KΩ
V 2	6SA7	0Ω	.6Ω	†1.8KΩ	†16KΩ	22KΩ	1Ω	0Ω	1.6Meg
V 3	6SK7	0Ω	0Ω	0Ω	30Ω	60Ω	†16KΩ	.6Ω	†1.8KΩ
V 4	6SQ7	0Ω	6.8Meg	0Ω	350KΩ	1.3Meg	†220KΩ	.6Ω	0Ω
V 5	6V6GT	.2Ω	0Ω	†370Ω	†1.8KΩ	220KΩ	220KΩ	.6Ω	330Ω
V 6	0Z4	0Ω	INF	300Ω	INF	295Ω	INF	INF	450KΩ

† MEASURED FROM PIN 8 OF V6
▲ TAKEN WITH VACUUM TUBE VOLTMETER

1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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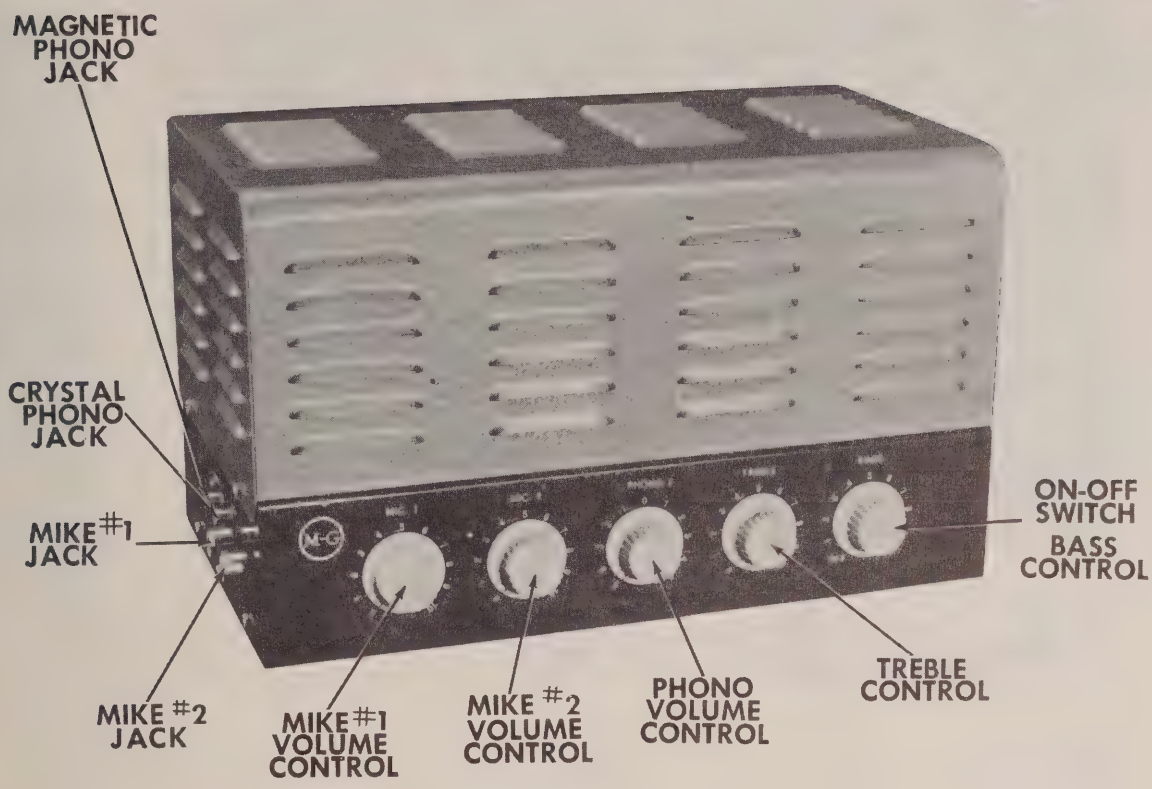
DON McGOHAN
MODEL MG-20-B



DON McGOHAN
MODEL MG-20-B

TRADE NAME	Don McGohan Model MG-20-B
MANUFACTURER	Don McGohan, Inc., 3700 W. Roosevelt Rd., Chicago 24, Ill.
TYPE SET	AC Operated 4 Channel Audio Amplifier
TUBES (SEVEN)	Types 6SC7 Mic. Pre Amp., 6SC7 Phono Pre Amp., 6SQ7 AF Amp., 6SL7GT Phase Inv., (2) 6L6GT Audio Output, 5V4G Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .88 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

DON McGOHAN
MODEL MG-20-B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		Don McGohan PART No.	STANDARD REPLACEMENT		
V1	Mic. Pre Amp.	6SC7	6SC7	8S	
V2	Phono Pre Amp.	6SC7	6SC7	8S	
V3	AF Amplifier	6SQ7	6SQ7	8Q	
V4	Phase Inverter	6SL7GT	6SL7GT	8BD	
V5	Audio Output	6L6G	6L6G	7AC	
V6	Audio Output	6L6G	6L6G	7AC	
V7	Rectifier	5V4G	5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

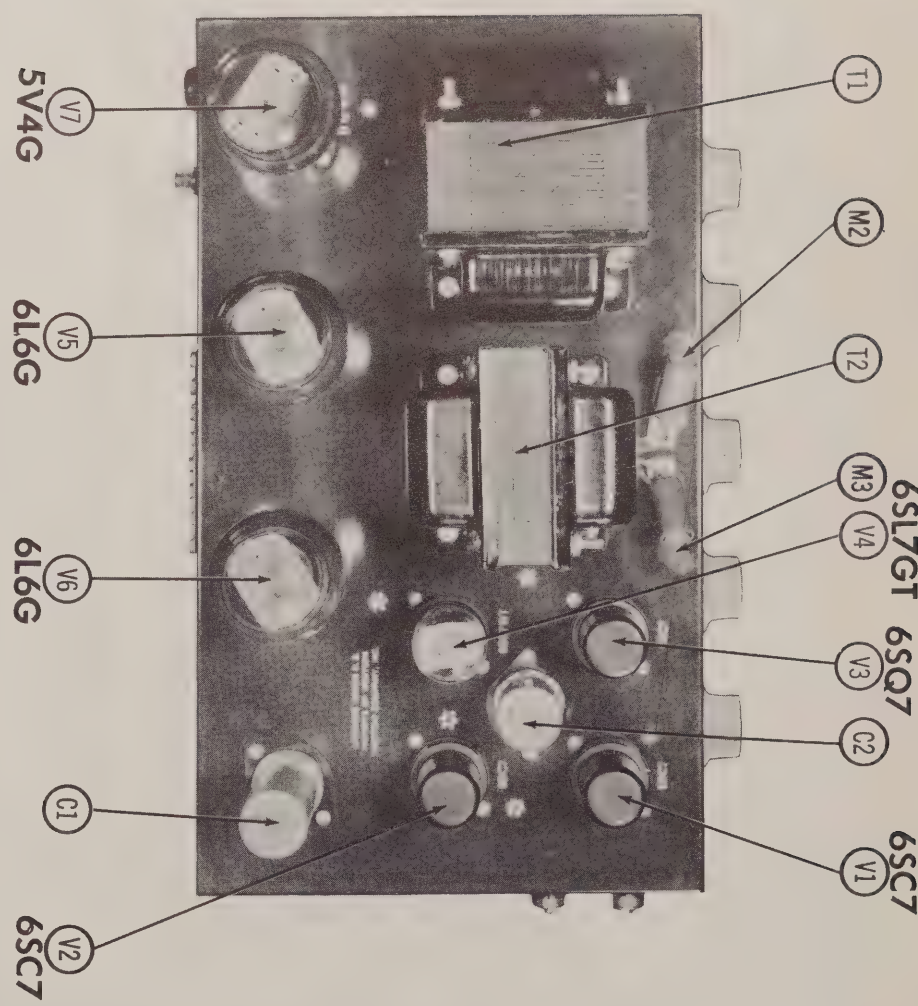
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Don McGohan PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲20	475		AFH3-51						
B	■20	475		PRS500/10						
C2A	▲10	475		AFH2-67		UP1150		FP258	TVL-3835	
B	■10	475								
C3	16	150		PRS150/16		BR1615		TC44	TVA-1409	
C4	10	50		PRS50/10		BR105		TC32	TVA-1304	
C5	10000			BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	Note 1
C6	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C7	10000			BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	Note 1
C8	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C9	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C10	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C11	10000			BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C12	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C13	10000			BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C14	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C15	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C16	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C17	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C18	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C19	.05	600		689ZGXY-05		PJ6S5		PT615	6TM-S5	Note 2

Note 1. Some Models use .02MFD in this application.
Note 2. Not used in all Models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	Don McGohan PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	BA011-301	Q13-133	AG-60-Z	B-60	U-48	Mike #1 Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	BA011-301	Q13-133	AG-60-Z	B-60	U-48	Mike #2 Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A
R3A	1 Meg	½	BA013-010	Q19-137X	AT-112	BT-71	UT-443	Phono Volume Tap @ 500KΩ
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R3A
R4A	500KΩ	½	BA011-301	Q13-133	AG-60-Z	B-60	U-48	Treble
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R4A
R5A	500KΩ	½	BA012-131	Q13-133	AG-60-Z	B-60-S	U-48	Bass
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R5A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R5A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Don McGohan PART No.	IRC PART No.	
R6	4.7Meg			BTS-4.7Meg	
R7	4.7Meg			BTS-4.7Meg	
R8	270KΩ			BTS-270K	
R9	270KΩ			BTS-270K	
R10	22KΩ			BTS-22K	
R11	10 Meg			BTS-10 Meg	
R12	33KΩ			BTS-33K	
R13	10 Meg			BTS-10 Meg	
R14	47KΩ			BTS-47K	
R15	68KΩ			BTS-68K	
R16	100KΩ			BTS-100K	
R17	270KΩ			BTS-270K	
R18	270KΩ			BTS-270K	
R19	100KΩ			BTS-100K	
R20	4.7Meg			BTS-4.7Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Don McGohan PART No.	IRC PART No.	
R21	1000Ω	1/2		BTS-1000	
R22	100KΩ	1/2		BTS-100K	
R23	470KΩ	1/2		BTS-470K	
R24	1500ΩΩ	1/2		BTS-1500	
R25	2700Ω	1/2		BTS-2700	
R26	100KΩ	1/2		BTS -100K	
R27	100KΩ	1/2		BTS-100K	
R28	15KΩ	1/2		BTS-15K	
R29	180KΩ	1/2		BTS-180K	
R30	250Ω	5		1 3/4A-250	
R31	180KΩ	1/2		BTS-180K	
R32	10KΩ	1/2		BTS-10K	
R33	22KΩ	1/2		BTS-22K	
R34	10KΩ	2		BTB-10K	
R35	10KΩ	1/2		BTS-10K	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	Don McGohan PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .88A	664VCT .104ADC	5VAC @ 3A	6.3VAC @ 3.4A		PC-8410		PV-120A	R-14A

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Don McGohan PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	13.5KΩ CT	500Ω tap @ 250Ω, 16Ω, 8Ω, 4Ω, 2.7Ω 2Ω	349Ω CT	19Ω tap @ 12.4Ω .66Ω, .43Ω, .27Ω .25Ω .22Ω		A-3303 ①				① This unit has 4-8-15-500Ω taps only

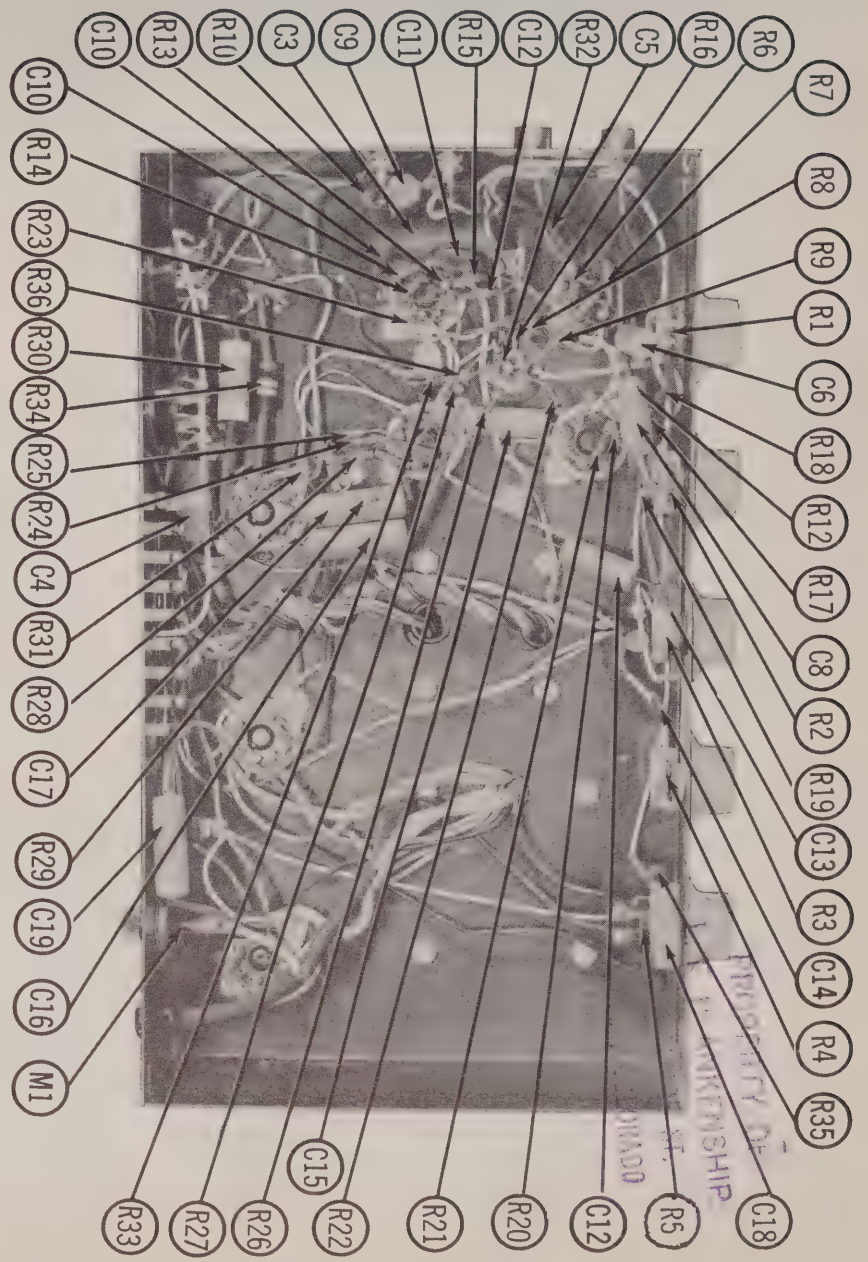
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Don McGohan PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V.			312002	342001	AGC-2	HKP

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Don McGohan PART No.		
M2	Bayonet	6-8	.15	Brown			Type #47
M3	Bayonet	6-8	.15	Brown			Type #47

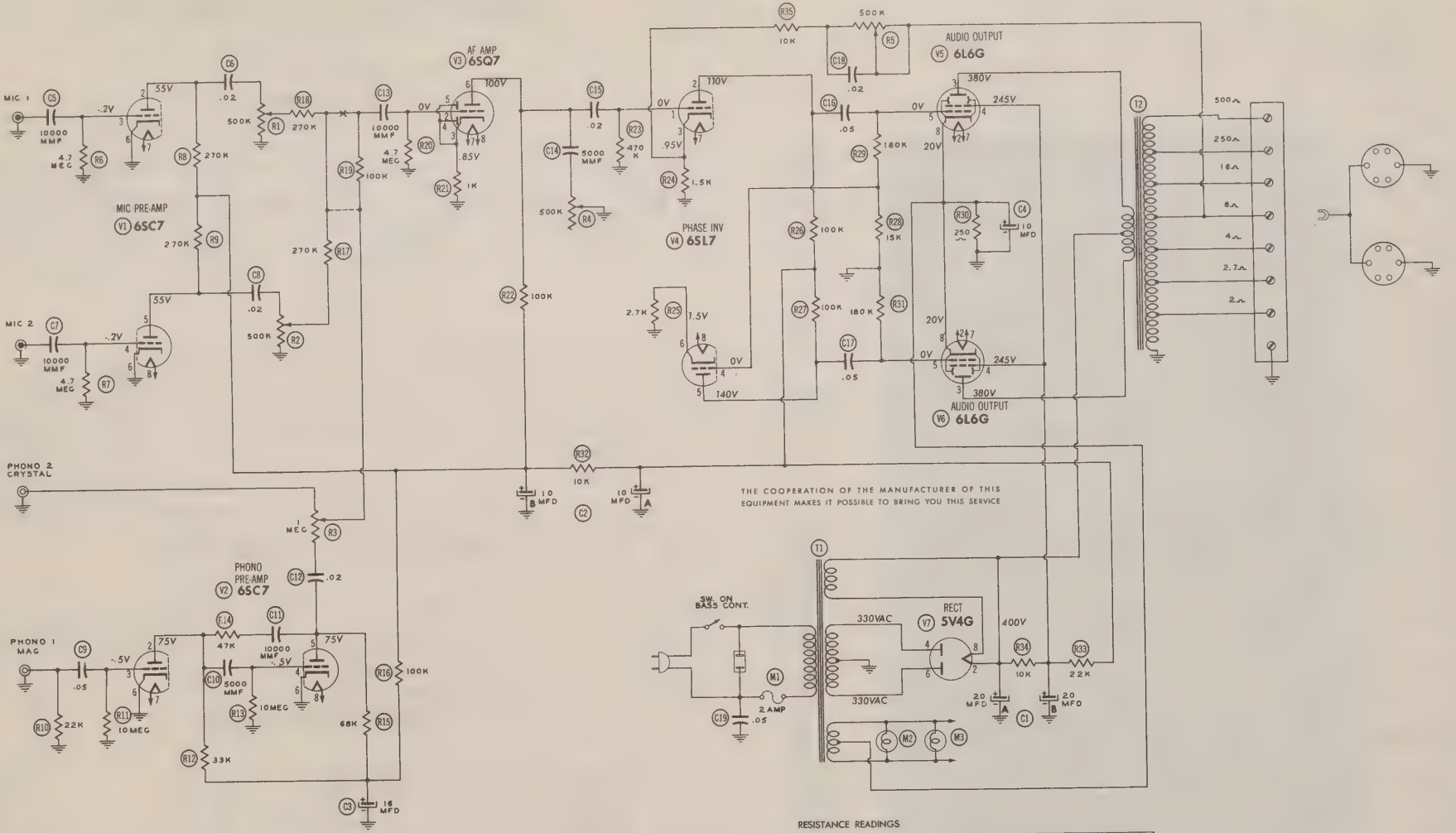
CHASSIS—BOTTOM VIEW



SET 189 FOLDER 5

DON McGOHAN MODEL MG-20-B

DON McGOHAN MODEL MG-20-B



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	†310KΩ	4.7Meg	4.7Meg	†310KΩ	0Ω	250Ω	250Ω
V 2	6SC7	0Ω	†175KΩ	10 Meg	10 Meg	†210KΩ	0Ω	250Ω	250Ω
V 3	6SQ7	0Ω	4.7Meg	1KΩ	1KΩ	1KΩ	†142KΩ	250Ω	250Ω
V 4	6SL7GT	470KΩ	†130KΩ	1.5KΩ	15KΩ	†130KΩ	2.7KΩ	250Ω	250Ω
V 5	6L6G	INF	250Ω	†180Ω	†10KΩ	195KΩ	INF	250Ω	250Ω
V 6	6L6G	INF	250Ω	†169Ω	†10KΩ	180KΩ	195KΩ	250Ω	250Ω
V 7	5V4G	INF	350KΩ	INF	72Ω	INF	78Ω	INF	350KΩ

† MEASURED FROM PIN 8 OF V7.

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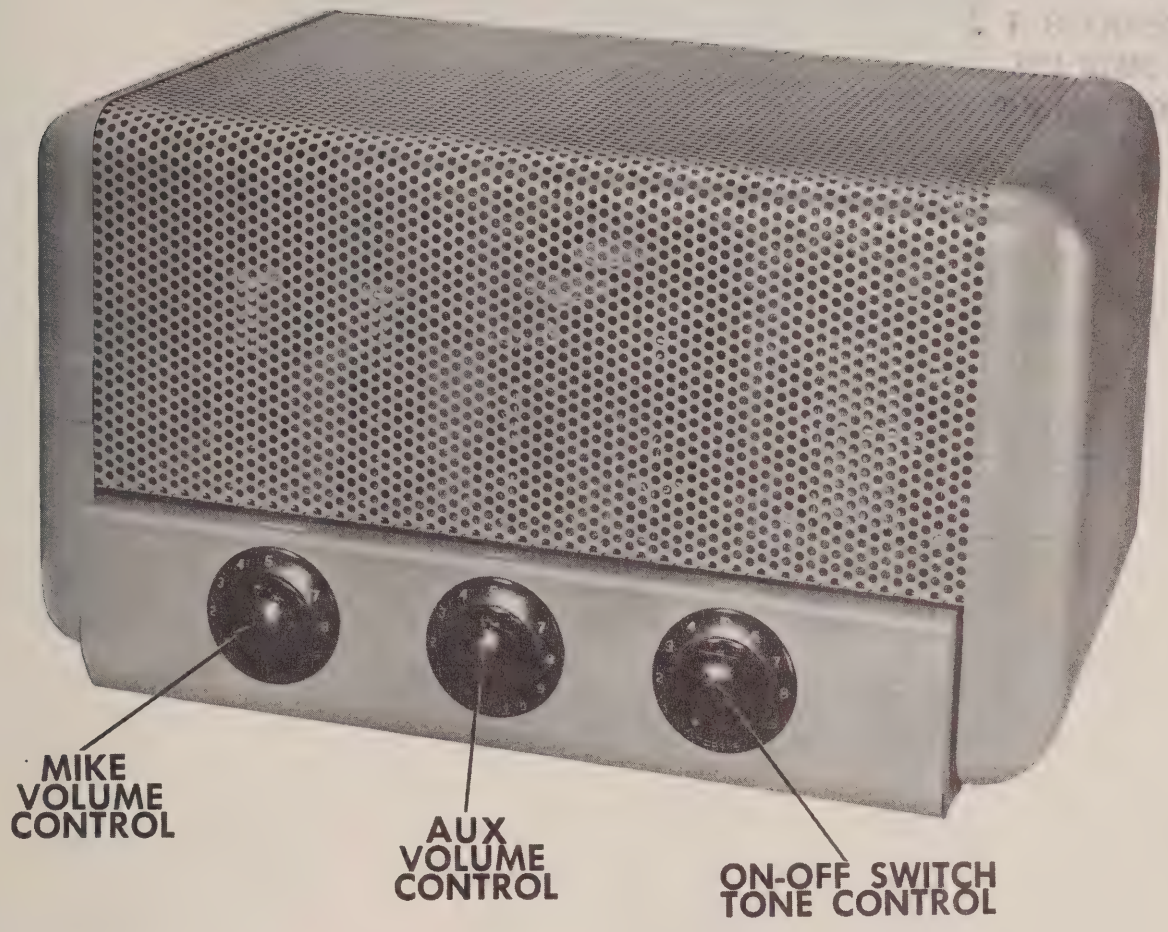
189-5

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

DUKANE
MODELS 1A300, 1B300

DUKANE
MODELS 1A300, 1B300



DUKANE
MODELS 1A300, 1B300

DUKANE MODEL 1A300

TRADE NAME	DuKane Models 1A300, 1B300
MANUFACTURER	DuKane Corp., St.Charles, Ill.
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBES (SIX)	Types 6J7 Mic Pre Amp., 6J7 AF Amp., 6SN7GT AF Amp.-Phase Inv., (2) 6V6GT Audio Output, 5Y3GT Rectifier
POWER SUPPLY	105- 125 Volts AC RATING .68 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

DUKANE
MODEL 1A300

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		DUKANE PART No.	STANDARD REPLACEMENT		
V1	Mic. Pre Amp.	262-6J7	6J7	7R	
V2	AF Amplifier	262-6J7	6J7	7R	
V3	AF Amplifier - Phase Inverter	262-6SN7GT	6SN7GT	8BD	
V4	Audio Output	262-6V6GT	6V6GT	7AC	
V5	Audio Output	262-6V6GT	6V6GT	7AC	
V6	Rectiifer	262-5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	DUKANE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲30	450	119-2932-00	AFH3-41		UPT41145		FP396.2	TVL-4840	
B	■10	450								
C	▲10	450								
C2A	▲30	450	119-2932-00	AFH3-41		UPT41145		FP396.2	TVL-4840	
B	■10	450								
C	▲10	450								
C3	25	25	119-2001-256	PRS25/25		BR252A		TC26	TVA-1205	
C4	25	25	119-2001-256	PRS25/25		BR252A		TC26	TVA-1205	
C5	25	25	119-2001-256	PRS25/25		BR252A		TC26	TVA-1205	
C6	.05	400	119-4021-503	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C7	.05	400	119-4021-503	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C8	.05	400	119-4021-503	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C9	.005	400	119-4020-502	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C10	.05	400	119-4021-503	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C11	.05	400	119-4021-503	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C12	.05	400	119-4021-503	P488-05	DF-503	PTE4S5		PT415	4TM-S5	

CONTROLS

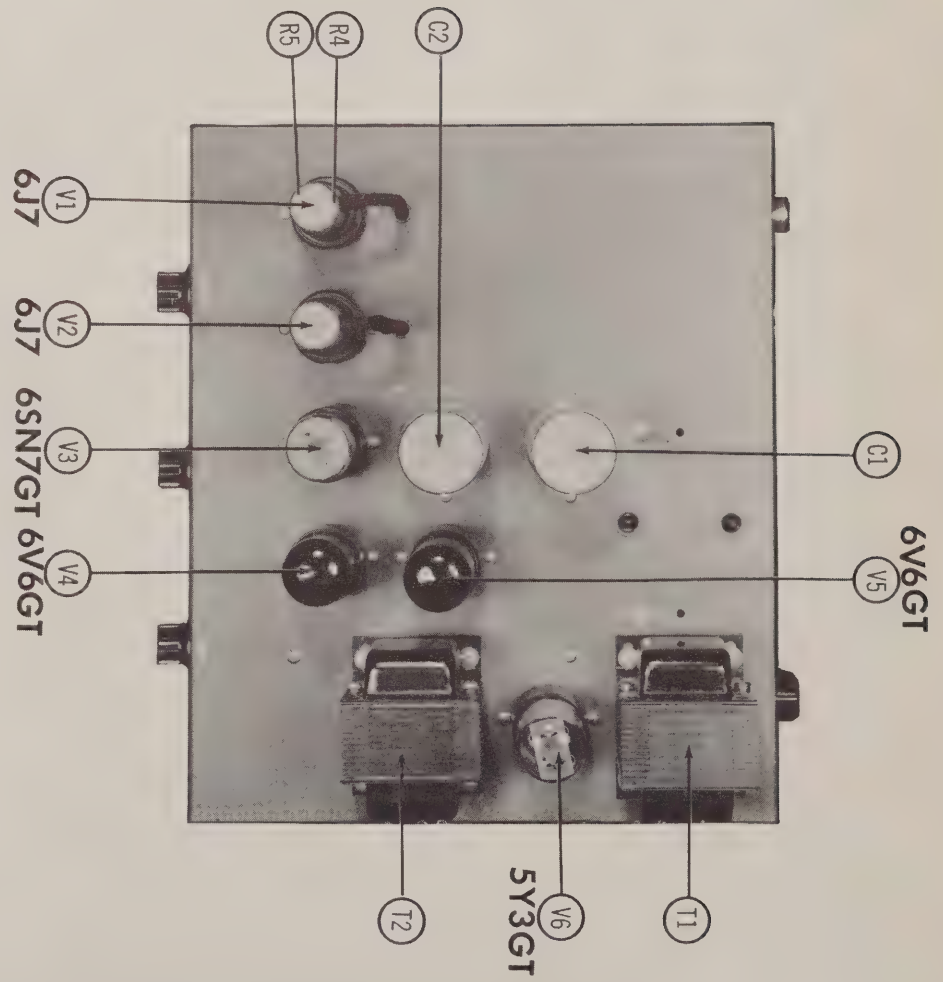
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	DUKANE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	601-40-00	Q13-133	AG-60-Z	BSK-60	U-48	Aux. Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	601-40-00	Q13-133	AG-60-Z	BSK-60	U-48	Mike Volume
B	Shaft		Not Req.	Not req.	KSS-3	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½	601-41-00	Q13-133	AG-60-Z	BSK-60-S	U-48	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R3A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R3A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	DUKANE PART No.	IRC PART No.	
R4	1 Meg	½	600-0043-105	BTS-1 Meg	
R5	68KΩ	½	600-0043-683	BTS-68K	
R6	1500Ω	1	600-0116-152	BTA-1500	
R7	820KΩ	1	600-0116-824	BTA-820K	
R8	220KΩ	1	600-0116-224	BTA-220K	
R9	470KΩ	1	600-0116-474	BTA-470K	
R10	470KΩ	1	600-0116-474	BTA-470K	
R11	1500Ω	1	600-0116-152	BTA-1500	
R12	100KΩ	1	600-0116-104	BTA-100K	
R13	68KΩ	1	600-0116-683	BTA-68K	
R14	1000Ω	1	600-0116-102	BTA-1000	
R15	1000Ω	1	600-0116-102	BTA-1000	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	DUKANE PART No.	IRC PART No.	
R16	150Ω	1	600-0116-151	BTA-150	
R17	47KΩ	1	600-0116-473	BTA-47K	
R18	1000Ω	1	600-0116-102	BTA-1000	
R19	47KΩ	1	600-0116-473	BTA-47K	
R20	47KΩ	1	600-0116-473	BTA-47K	
R21	470KΩ	1	600-0116-474	BTA-470K	
R22	200Ω	5	600-1008-201	1 3/4A-200	
R23	470KΩ	1	600-0116-474	BTA-470K	
R24	15KΩ	1	600-0116-153	BTA-15K	
R25	4700Ω	1	600-0116-472	BTA-4700	
R26	1000Ω	1	600-0116-102	BTA-1000	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	DUKANE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .44A	634VCT .095ADC			710-4075				

TRANSFORMER (FILAMENT)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	DUKANE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T2	117VAC @ .26A	5VAC @ 2A	6.3VCT @ 2.4A		710-4074		P-3041 ①		F-30A ①

① Drill new mounting holes.

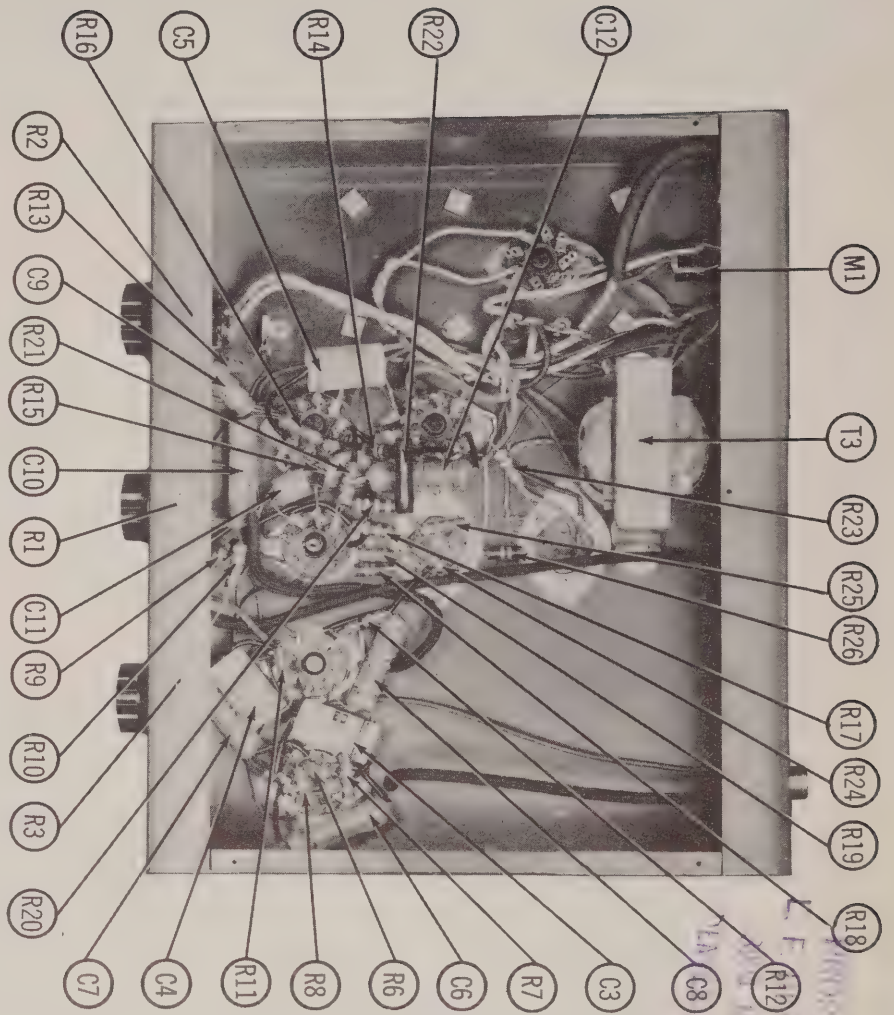
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		DUKANE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T3	7.8KΩ CT	70V. tap @ 4Ω	356Ω CT	25.6Ω tap @ .32Ω	710-2042				S-28X	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DUKANE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG Slo-Blo	3A 125V.	320-835-0300		312002	341001	MDL-3	HKP

CHASSIS—BOTTOM VIEW



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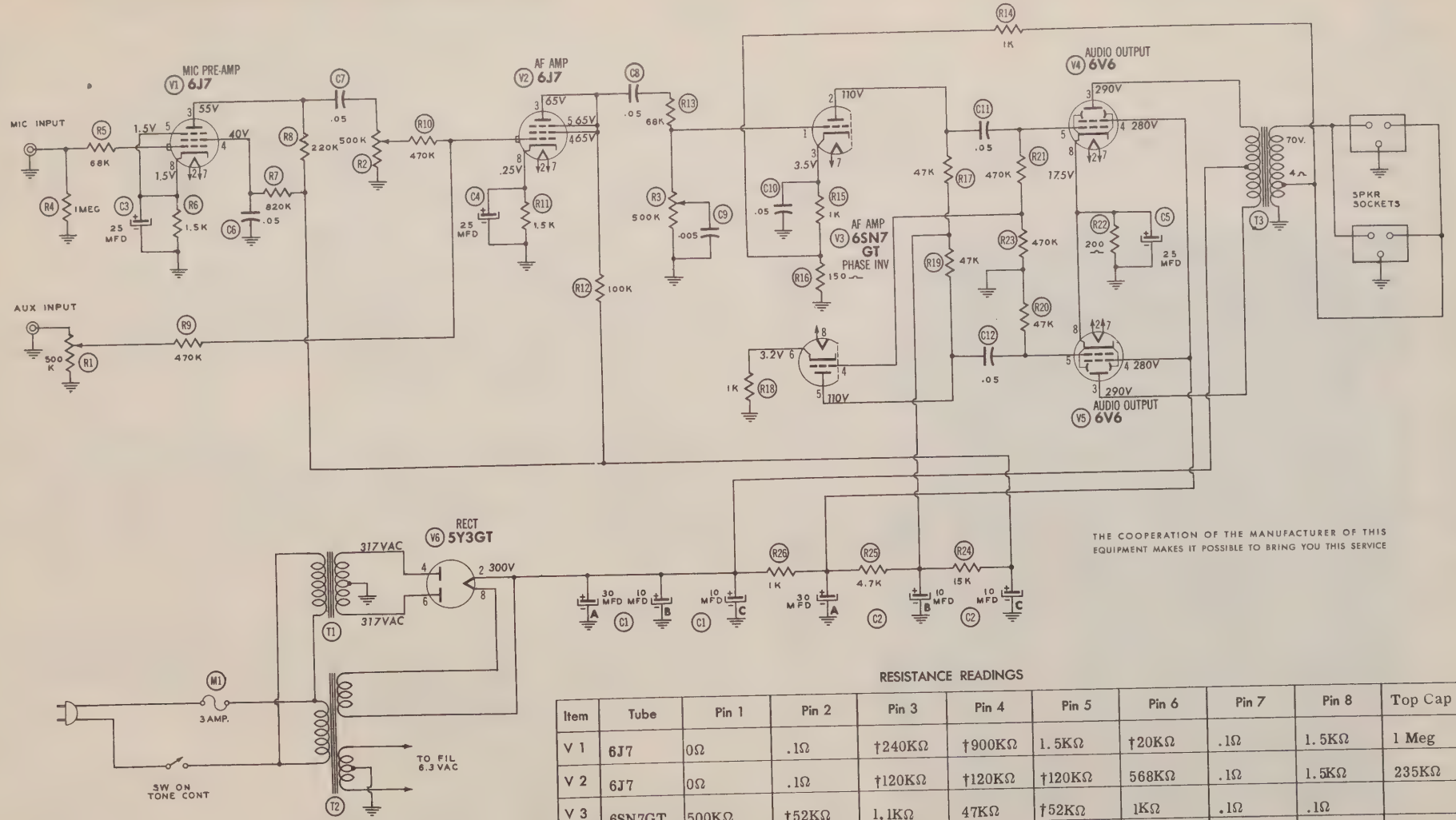
DUKANE MODEL IA300



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Top Cap
V 1	6J7	0Ω	.1Ω	†240KΩ	†900KΩ	1.5KΩ	†20KΩ	.1Ω	1.5KΩ	1 Meg
V 2	6J7	0Ω	.1Ω	†120KΩ	†120KΩ	†120KΩ	568KΩ	.1Ω	1.5KΩ	235KΩ
V 3	6SN7GT	500KΩ	†52KΩ	1.1KΩ	47KΩ	†52KΩ	1KΩ	.1Ω	.1Ω	
V 4	6V6GT	0Ω	.1Ω	†188Ω	†1KΩ	520KΩ	130Ω	.1Ω	200Ω	
V 5	6V6GT	0Ω	.1Ω	†168Ω	†1KΩ	470KΩ	.32Ω	.1Ω	200Ω	
V 6	5Y3GT	INF	300KΩ	INF	275Ω	INF	249Ω	INF	300KΩ	

† MEASURED FROM PIN 8 OF V6

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

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DENVER, COLO.

DUMONT MODELS
RA-164, RA-165

MODEL RA-165

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

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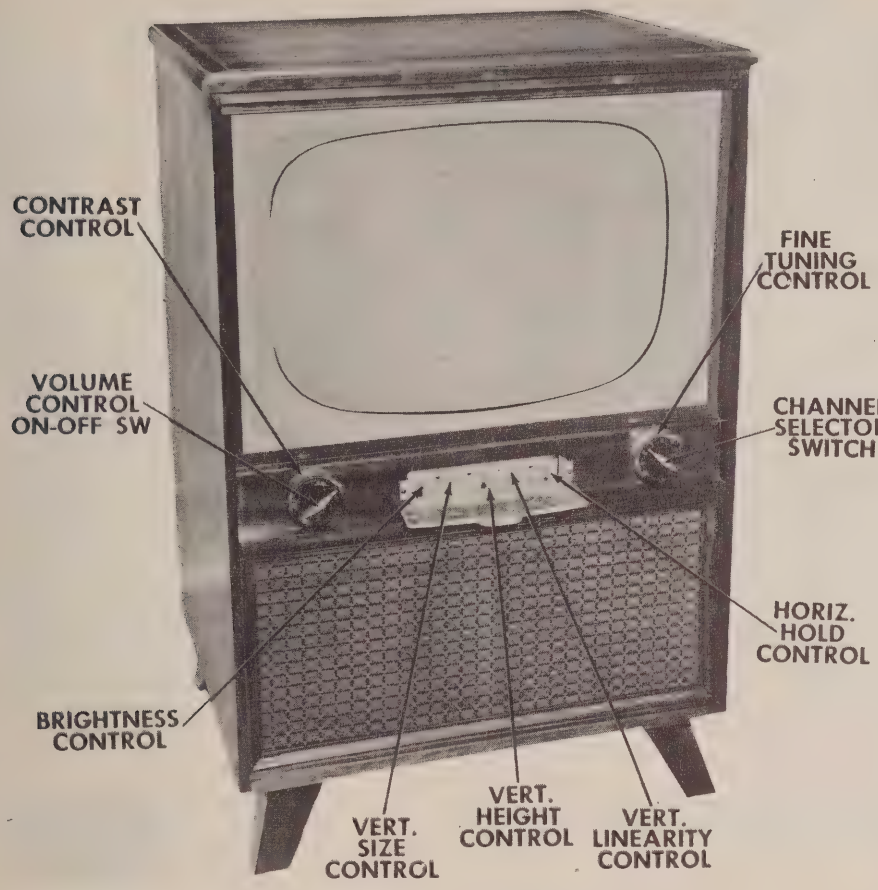

DUMONT MODEL RA-165 (Beverly)

TRADE NAME	Dumont Models RA-164 (Clinton), RA-165 (Beverly, Milford, Ridgewood, Shelburne, Wakefield)
MANUFACTURER	Allen B. Dumont Laboratories, Inc., 2 Main St., Passaic, N.J.
TYPE SET	Television Receiver
TUBES	Twenty-one
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.62 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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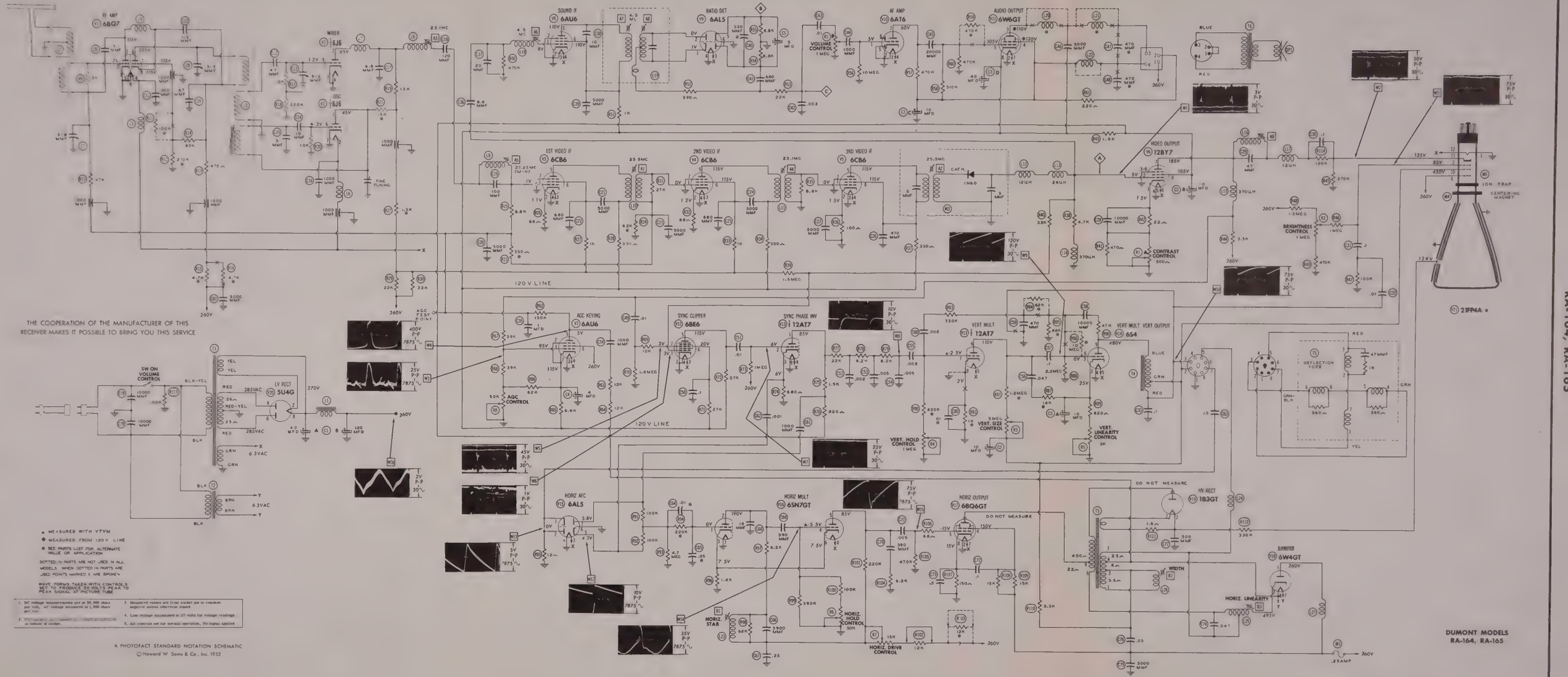
DUMONT MODELS
RA-164, RA-165


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
RF AMP 6BQ7
MIXER 6J6
OSC 6J6
SOUND IF 6AU6
RATIO DET 6AL5
AF AMP 6AT6
AUDIO OUTPUT 6W6GT
1ST VIDEO IF 6CB6
2ND VIDEO IF 6CB6
3RD VIDEO IF 6CB6
VIDEO OUTPUT 12BY7
AGC KEYING 6AU6
SYNC CLIPPER 6BE6
SYNC PHASE INV 12AT7
VERT MULT 12AT7
VERT MULT VERT OUTPUT 6S4
HORIZ AFC 6AL5
HORIZ MULT 6SN7GT
HORIZ OUTPUT 6BQ6GT
HV RECT 1B3GT
LV RECT 5U4G
6W4GT
21FP4A
VOLUME CONTROL 1 MEG
CONTRAST CONTROL 500K
BRIGHTNESS CONTROL 1 MEG
VERT. HOLD CONTROL 1 MEG
VERT. SIZE CONTROL 3 MEG
VERT. LINEARITY CONTROL 5K
AGC CONTROL 50K
HORIZ. HOLD CONTROL 50K
HORIZ. STAB
HORIZ. DRIVE CONTROL
HORIZ. LINEARITY
WIDTH
ION TRAP CENTERING MAGNET
DEFLECTION YOKE
SW ON VOLUME CONTROL
120 V LINE
DO NOT MEASURE
▲ MEASURED WITH VTVM
● MEASURED FROM 120 V LINE
■ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt
2. [illegible]
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, No signal applied
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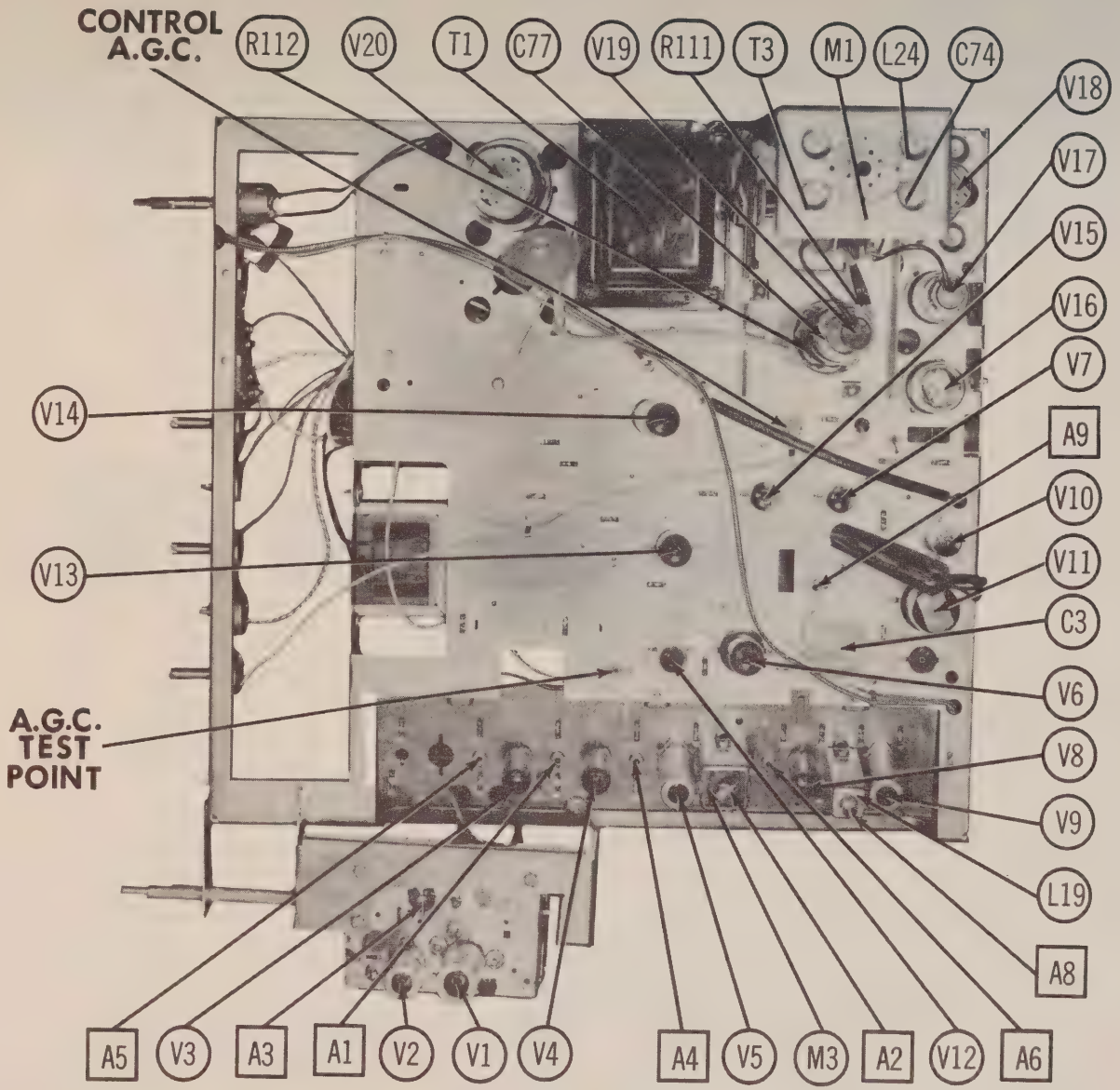
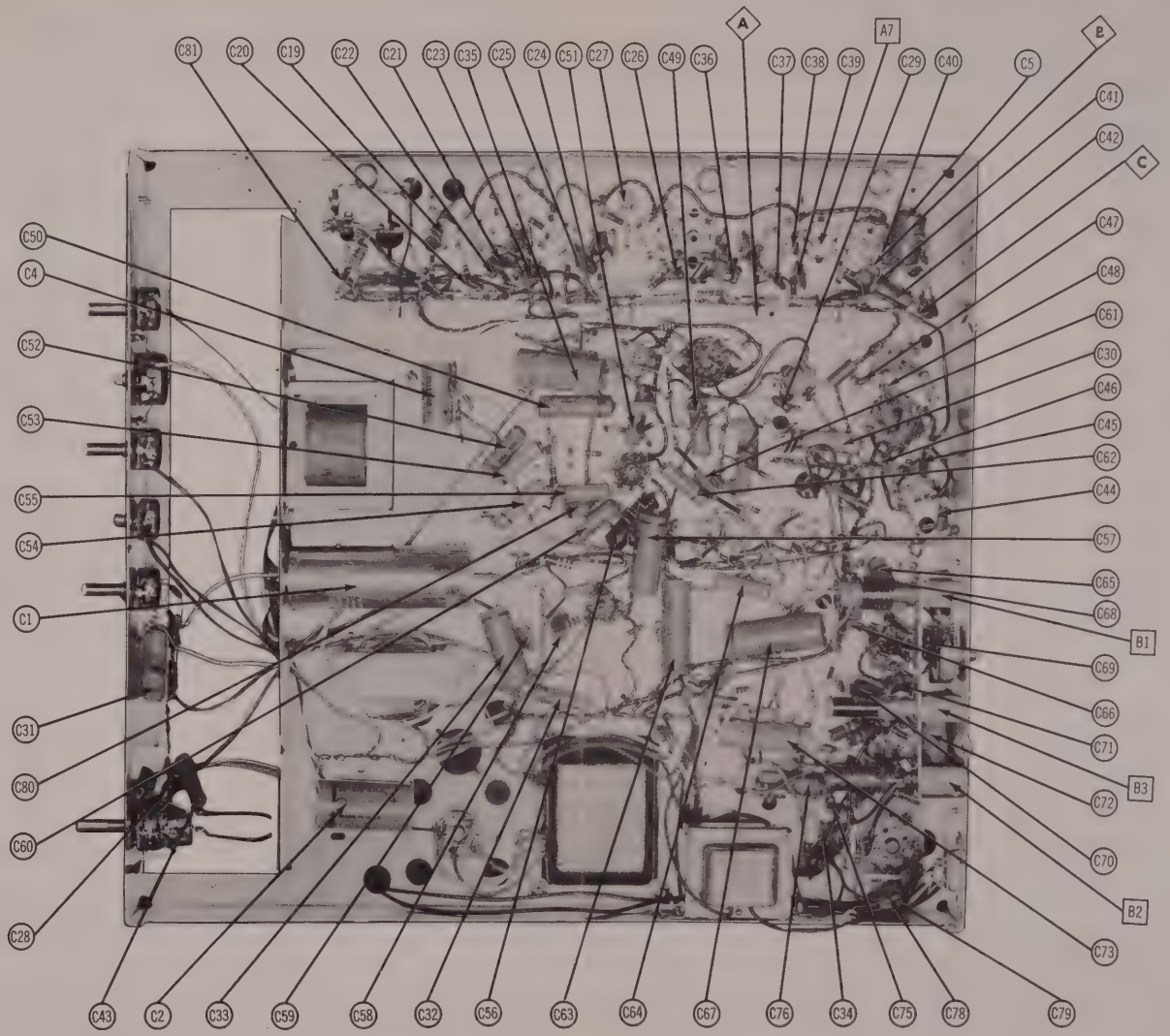
DUMONT MODELS
RA-164, RA-165

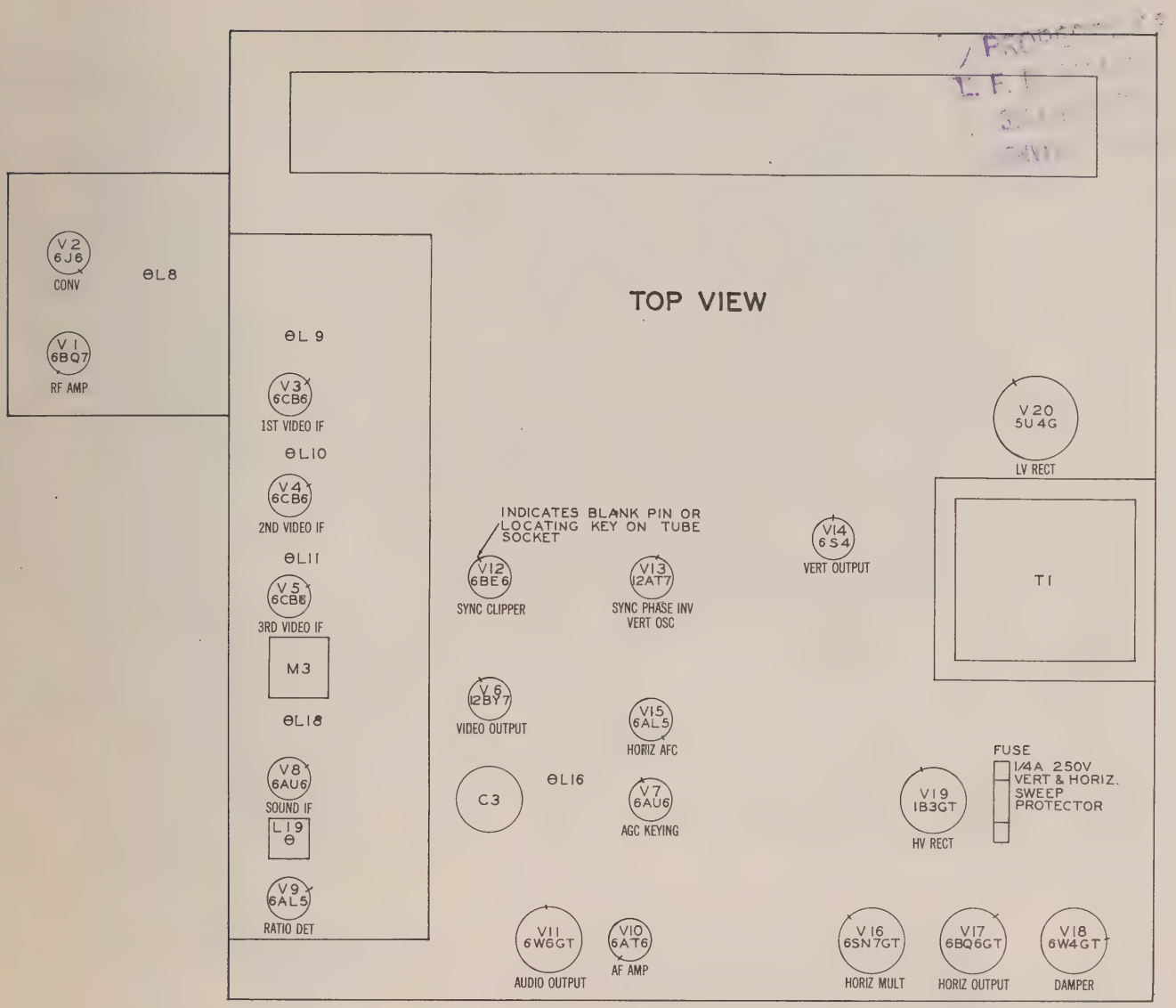


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V20

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V11
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V6, V21
Has pic, no sound-V8, V9, V10, V11
Overloaded picture-V7

SYNC FAILURE
No vert. sync-V13
No horiz. sync-V13, V15, V16
No vert. or horiz. sync.-V12, V13

SWEEP FAILURE
No raster, has sound-V16, V17, V18, V19, V21 Fuse (M1)
No vertical deflection-V13, V14
Poor vert. linearity or foldover-V13, V14
Poor horiz. linearity or foldover-V16, V17, V18
Narrow picture-V16, V17, V18, V19, V20
Vert. off freq.-V13
Horiz. off freq.-V13, V15, V16

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube (V16).

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Short the AGC test point to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis	25.5MC (Unmod)	Any	DC probe to point (A) Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	27.25MC	"	"	A5	Adjust for MINIMUM deflection.
3.	"	"	23.1MC	"	"	A3. A4	Adjust for maximum deflection.

OVERALL VIDEO IF RESPONSE CHECK

Remove the short from the AGC test point.
Connect the negative lead of a 3 volt battery. to the AGC test point. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis	24.MC (Unmod)	21.25MC 25.75MC 27.25MC	Any	Vert. amp to point (A) Low side to chassis.		Check for response curve similar to fig.1. If necessary retouch A1 thru A4 for desired response.

PHASING ADJUSTMENT

Remove the dummy converter tube and replace the original 6J6 in its socket. Remove the bias battery.
Turn the set on and tune in a TV station, preferably a test pattern.
Turn the fine tuning control fully counter-clockwise.
If sound bars do not appear in picture adjust the oscillator slug to produce a slight amount of sound in the picture.
Turn the fine tuning control clockwise until sound in picture is eliminated.
Examine picture for evidence of smear or trailing whites.
If either condition is present adjust A1 as follows:
Not more than 1/4 turn counter clockwise to reduce smear.
Not more than 1/4 turn clockwise to reduce trailing whites.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A6, A7	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point (C) Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A6, A7	Disconnect stabilizer capacitor C5. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
6.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A8	Reconnect capacitor C5. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to point (A). Low side to chassis.	Not used	4.5MC (400~Mod)	Any	Vert. Amp. thru crystal detector (fig.4) to junction of L16 and R114. Low side to chassis.	A9	Adjust for MINIMUM 400~ indication.

RF ALIGNMENT

The tuner portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

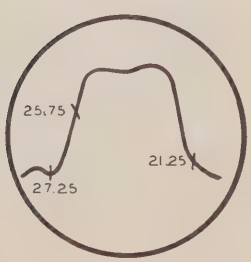


FIG.1

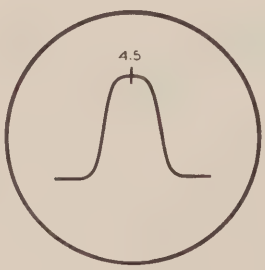


FIG.2

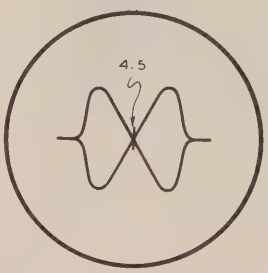


FIG. 3

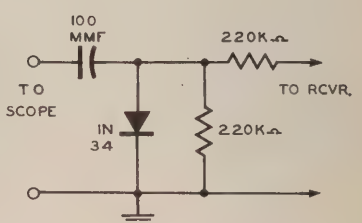
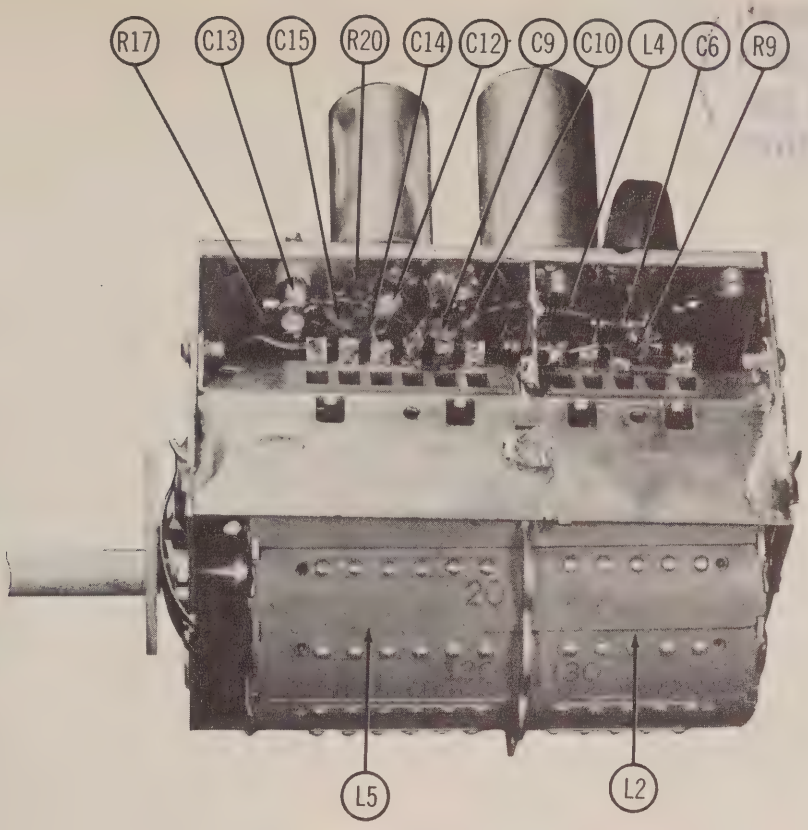
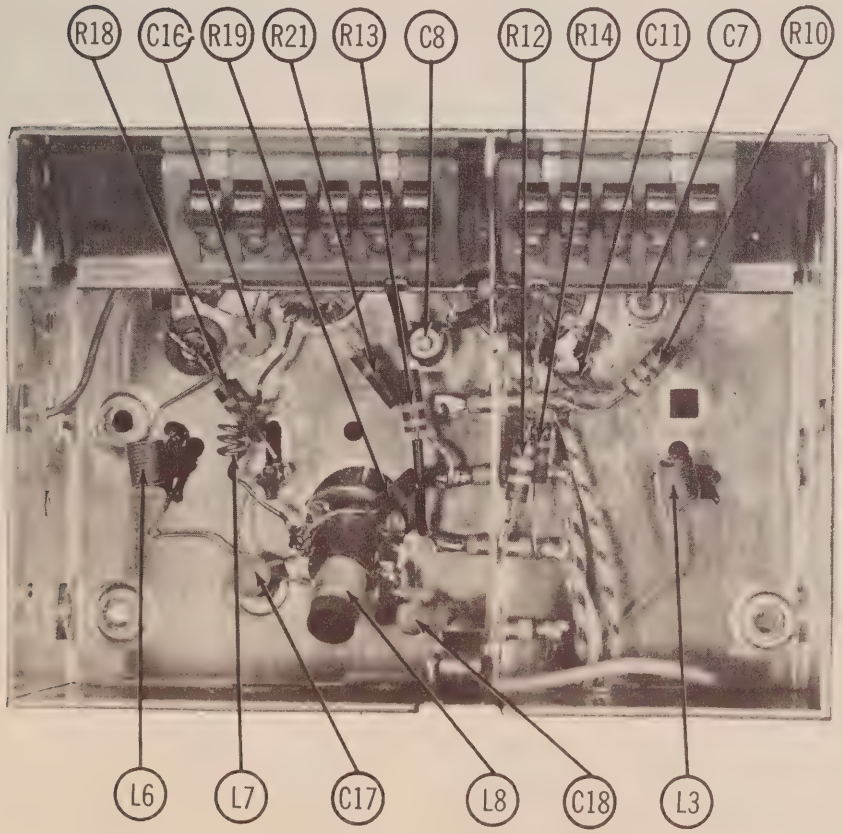


FIG.4



RF TUNER-RIGHT SIDE

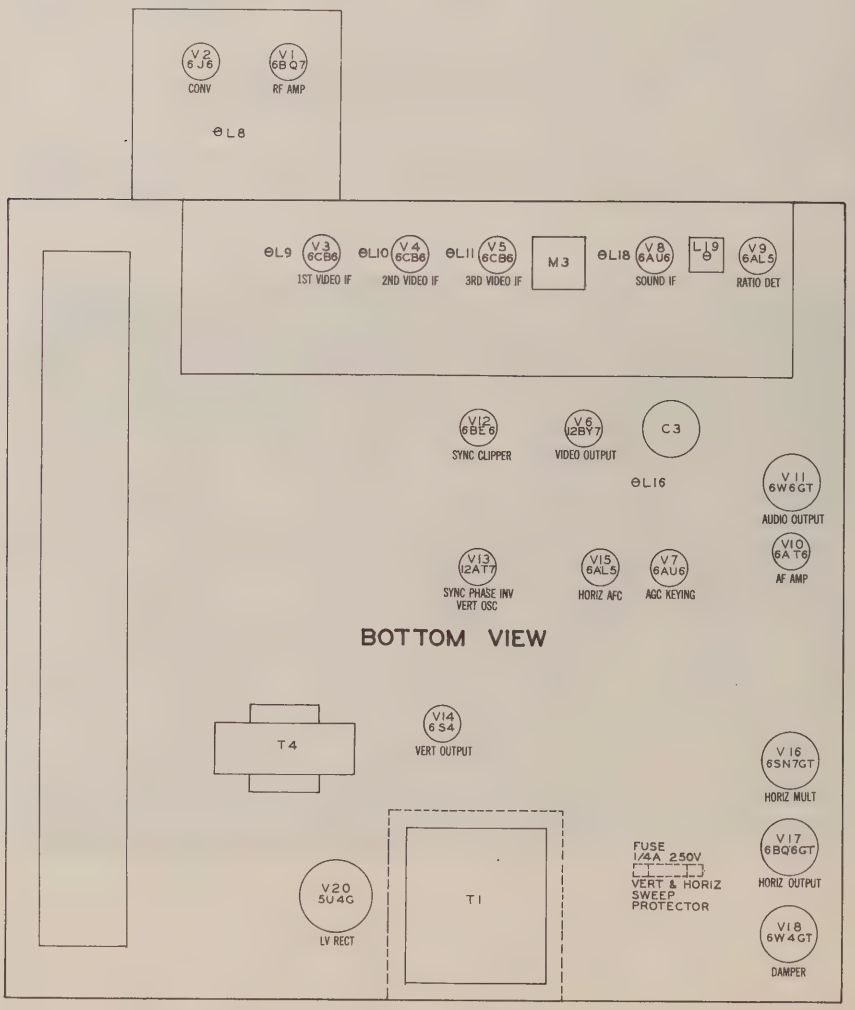


RF TUNER-BOTTOM VIEW

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	130KΩ	0Ω	.1Ω	0Ω	†2.8KΩ	†115KΩ	INF	0Ω
V 2	6J6	†27KΩ	†27KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	88KΩ	68Ω	.1Ω	0Ω	♦330Ω	†12KΩ	0Ω		
V 4	6CB6	82KΩ	68Ω	.1Ω	0Ω	♦330Ω	†12KΩ	0Ω		
V 5	6CB6	.5Ω	100Ω	0Ω	.1Ω	♦330Ω	♦330Ω	0Ω		
V 6	12BY7	100Ω	4.7KΩ	0Ω	0Ω	0Ω	1Ω	†5.5KΩ	♦1.8KΩ	0Ω
V 7	6AU6	†42KΩ	♦6.8KΩ	0Ω	.1Ω	320KΩ	†45Ω	♦6.8KΩ		
V 8	6AU6	470KΩ	0Ω	0Ω	.1Ω	♦1KΩ	♦1KΩ	0Ω		
V 9	6AL5	INF	INF	.1Ω	0Ω	6.8KΩ	0Ω	6.8KΩ		
V 10	6AT6	10 Meg	0Ω	0Ω	.1Ω	0Ω	INF	†470Ω		
V 11	6W6GT	INF	0Ω	†565Ω	†265Ω	255KΩ	36KΩ	.1Ω	83KΩ	
V 12	6BE6	38KΩ	0Ω	.1Ω	0Ω	♦27KΩ	♦27KΩ	1.8Meg		
V 13	12AT7	♦4.1KΩ	†1 Meg	680Ω	.1Ω	.1Ω	#2.7Meg	1.3Meg	1KΩ	0Ω
V 14	6S4	INF	1.8KΩ	2.2Meg	0Ω	.1Ω	2.2Meg	INF	INF	#5KΩ
V 15	6AL5	12Ω	12Ω	.1Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 16	6SN7GT	5 Meg	†18KΩ	1.8KΩ	120KΩ	†230KΩ	1.8KΩ	0Ω	.1Ω	
V 17	6BQ6GT	INF	0Ω	470KΩ	†7.5KΩ	470KΩ	INF	.1Ω	150Ω	Top Cap #28Ω
V 18	6W4GT	INF	INF	700KΩ	INF	†45Ω	INF	#27Ω	#27Ω	
V 19	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #427Ω
V 20	5U4G	INF	45KΩ	INF	26Ω	INF	25Ω	INF	45KΩ	
V 21	21FP4A	0Ω	1.6Meg	Pin 6 †45Ω	Pin 10 #3.3KΩ	Pin 11 †100KΩ	Pin 12 .1Ω			

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V20
# MEASURED FROM PIN 3 OF V18
♦ MEASURED FROM 120V LINE



TUBE PLACEMENT CHART

AGC AND ION TRAP ADJUSTMENT

AGC ADJUSTMENT

The AGC control is properly adjusted at the factory and will not normally require readjustment except in the following cases:

1. Insufficient contrast.
2. Poor horizontal or vertical noise immunity.
3. Sync Buzz.
4. Picture distortion or loss of vertical sync due to overloading of Video IF.

Tune to channel affected and adjust AGC control to eliminate the difficulty

To adjust the AGC control to prevent overload on very strong signals the following procedure should be used:

1. Set horizontal hold for maximum straightness of vertical elements of test pattern near top of picture.
2. Adjust AGC control until overload is eliminated.
3. Switch momentarily to another channel and back again.
4. If overload reappears in step 3 readjust the AGC control to correct the condition. Repeat steps 3 and 4, if necessary.

ION TRAP MAGNET ADJUSTMENT

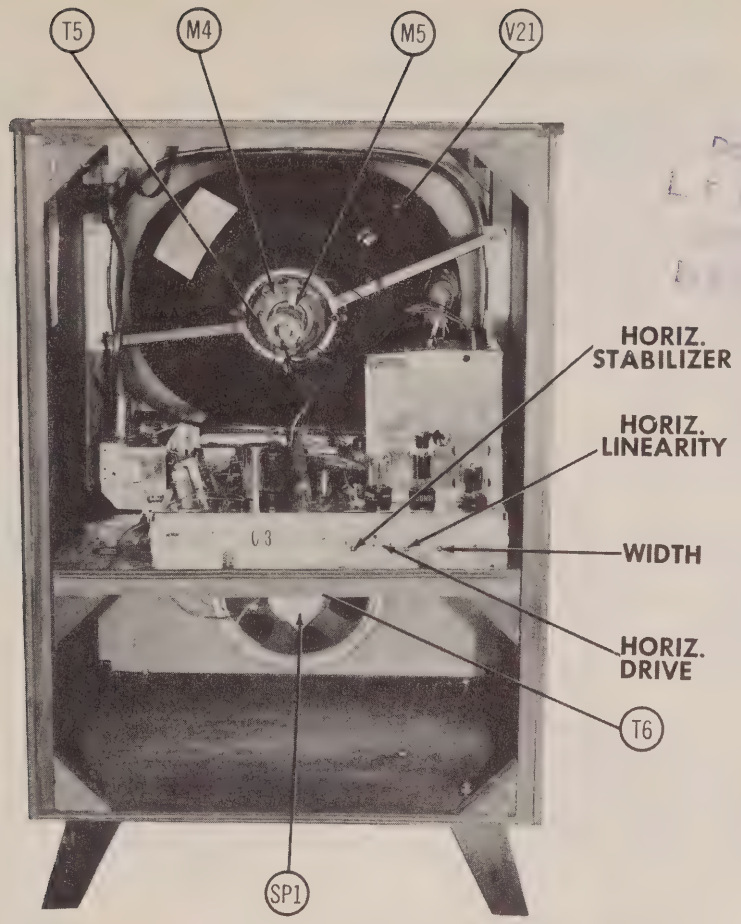
The small magnetic shunt which is clipped on to the Ion trap magnet should NOT be removed.

Place the magnet on the neck of the tube with the coil spring below the tube and the part number stamped on the magnet, to the left, as viewed from the rear of the tube.

Let set warm up for 30 seconds. Set contrast control at middle of range and brightness control so that raster is just visible on screen.

Slide the magnet back and forth on the tube neck while rotating it to the left and right. As raster gets brighter turn down brightness control until there is just enough brightness to allow adjustment to be made. Locate magnet position which gives maximum brightness and optimum focus. Turn up the brightness control until the raster begins to increase in size.

Adjust Ion trap again for maximum brightness and optimum focus.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control to the center of its range.

Short the AFC test point (pin 1 of V16) to chassis.

Adjust the horizontal stabilizer slug (B1) until picture synchronizes momentarily. Remove the short from the AFC test point.

The presence of a vertical white line in the center of the picture indicates improper adjustment of the horizontal drive control. Turn the control until the white line just disappears.

If the range of the control is insufficient to eliminate the white line, remove the jumper across R102 and readjust the horizontal drive control.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 5 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws and remove antenna bracket.
4. Disconnect speaker, yoke plug, HV lead, CRT socket , Electrostatic focus plug, and ground strap from CRT support.
5. Remove 4 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: DUMONT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	AGC Keying	6AU6	6AU6	7BK	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector	6AU6	6AU6	7BK	
V10	AF Amplifier	6AT6	6AT6	7BT	
V11	Audio Output	6V6GT	6V6GT	7AC	
V12	Sync Clipper	6BE6	6BE6	7CN	
V13	Sync. Phase Inv. - Vert Mult.	12AT7	12AT7	9A	
V14	Vert. Mult. - Vert. Output	6S4	6S4	9AC	
V15	Horiz. AFC	6AL5	6AL5	6BT	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V18	Damper	6W4GT	6W4GT	4CG	
V19	Rectifier	1B3GT	1B3GT	5T	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: DUMONT PART No.	REPLACEMENT DATA: SYLVANIA Part No.	RMA BASE TYPE	NOTES
V21A	21EP4A	21EP4A	12C	① Circuit changes necessary
		21EP4 ②	12C	
		21EP4 ①	12D	
		21EP4A ①	12D	
B	17HP4	17HP4	12L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	+40	400	30120080	E4B315		UPT44445				TVA-1712
B	+120	400				BR4045A		-		TVA-1716
C2	10	350	30120930	PRS350/12		BR1045A		TC82		TVA-1604
C3A	10	50	30121070	AF353-154		UP41145				TVA-1699
B	+10	200		PRS50/10						
C	+10	400								
D	+40	200								
C4	4	300	30122480	PRS250/4		BR425		TC50X		TVA-1501
C5	5	50	30120960	PRS150/4		BR550		TC30		TVA-1303
C6	3		30123020				NP0K-030			
C7	3-8		30119160		829-10					
C8	.5-3		30119150		829-3			C7565A		
C9	47		30119170	SI47	D8-470	TM5QS	GP1K-470	UC-5447		5GA-Q47
C10	1.5		30123020	S1L5NP0	TCZ-1.5		NP0K-1R5	ZT-5515		5TCCB-V15
C11	1000		30130490	BPD-001	DD-102	TM5DI	801-001	DC-521		5HK-D1
C12	47		30119170	SI47	D8-470	TM5QS	GP1K-470	UC-5447		5GA-Q47
C13	.5-3		30119150		829-3			C7565A		
C14	10		30119210	S1L0N750	TCN-10		N750K-100	NT-541		5TCU-Q1
C15	5		30123010	S1SNP0	TCZ-4.7		NP0K-050	ZT-555		5TCC-Q5
C16	1000		30130490	BPD-001	DD-102	TM5DI	801-001	DC-521		5HK-D1
C17	8.8		30119190	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568		5TCCB-V68
C18	120		30123040	SI120	D8-121	TM5T12	GP2K-121	UC-5313		5GA-T12
C19	100		30119640	S1100NP0	TCZ-100		NP0-333-101	ZT-531		5TCC-T1
C20	5000		30130510	BPD-005	DD-502	TM5DS	81L-005	DC-525		5HK-D5
C21	5000		30130510	BPD-005	DD-502	TM5DS	81L-005	DC-525		5HK-D5
C22	680		30121520	SI680	D8-681		GP3K-681	UC-5368		5GA-T68
C23	5000		30130510	BPD-005	DD-502	TM5DS	81L-005	DC-525		5HK-D5
C24	5000		30130510	BPD-005	DD-502	TM5DS	81L-005	DC-525		5HK-D5
C25	680		30121520	SI680	D8-681		GP3K-681	UC-5368		5GA-T68
C26	470		30130480	SI470	D8-471		GP2K-471	UC-5347		5GA-T47
C27	5000		30130510	BPD-005	DD-502	TM5DS	81L-005	DC-525		5HK-D5
C28	10000		30130650	BPD-01	DD-103	TM5BI	821-01	DC-5U		5HK-5I
C29	47		30130760	S147NP0	TCZ-47		NP0K-470	UC-5447		5TCC-Q47
C30	.1	400	30119940	P488-1	DF-104	PT4P1		PT401		4TM-P1
C31	.1	200	30131910	P288-1	DF-104	PJ2P1		PT401		2TM-P1
C32	.01	800	30912560	P688-01	D8-103	PT8S1	GP2-333-103	PT61		6TM-S1
C33	.1	600	30120740	P688-1	DF-104	PT6P1		PT601		6TM-P1
C34	1000	2000	30132420	441WL-HV-001						
C35	1.0	100	30132800	485-1.0		PJ2W1		PT41		2TM-M1
C36	6.8		30120900	S1L6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5468		5TCCB-V68
C37	30		30123800	S120NP0	TCZ-20		NP0K-200	ZT-542		5TCC-Q2
C38	10		30130270	S110NP0	TCZ-10		NP0K-100	ZT-541		5TCC-Q1
C39	5000		30130510	BPD-005	DD-502	TM5DS	81L-005	DC-525		5HK-D5
C40	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	Note 2
C41	680		30121520	SI680	D8-681		GP3K-681	UC-5368	5GA-T68	
C42	.003	600	30130200	P688-003	D8-302	PT6D3	GP2-333-302	PT623	6TM-D3	
C43	.01	400	30914900	P488-01	D8-103	PT4S1	GP2-333-103	PT41	4TM-S1	
C44	1000		30130490	SI1000	D8-102	TM5DI	GP2K-102	UC-521	5HK-D1	
C45	20000		30132430	P8A8-02		PT8I2		PT812	5HK-S2	
C46	5000		30130510	BPD-005	DD-502	TM5DS	81L-005	DC-525	5HK-D5	
C47	470		30130480	SI470	D8-471	TM5T5	GP3K-471	UC-5347	5GA-T47	Note 1
C48	470		30130480	SI470	D8-471	TM5T5	GP3K-471	UC-5347	5GA-T47	Note 1
C49	.01	600	30120780	P688-01	D8-103	PT6S1	GP2-333-103	PT61	6TM-S5	
C50	.1	200	30131910	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C51	.01	400	30120580	P488-01	D8-103	PT4S1	GP2-333-103	PT41	4TM-S1	
C52	.002	600	30018650	P688-002	D8-202	PT6D2	GP2-333-202	PT622	6TM-D2	
C53	.005	600	30120190	P688-005	D8-502	PT6D5	GP2-333-502	PT625	6TM-D5	
C54	.005	600	30120190	P688-005	D8-502	PT6D5	GP2-333-502	PT625	6TM-D5	
C55	.002	600	30122000	P688-002	D8-202	PT6D2	GP2-333-202	PT622	6TM-D2	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C56	.047	600	30105100	P688-047		PT8S47		PT8I47	6TM-S47	
C57	.1	600	30120740	P688-1	DF-104	PT6S1		PT601	6TM-P1	
C58	1000	1000	30119630	1467L-HV-001				MCK210	10GAB-D1	
C59	470	2000	30122440						60JKD-T47	
C60	.002	600	30122000	P688-002	D6-202	PT6GD2	GP2-333-202	PT622	6TM-D2	
C61	1000	500	30120830	1468-001	D6-102		GP2L-102	MC255	1FM-21	
C62	.001	600	30120820	P688-001	D6-102	PT6ED1	GP2L-102	PT621	6TM-D1	
C63	.15	600	30120730	884-15				PT417		
C64	.01	200		P486-01	D6-103	PT4E81	GP2-333-103	PT411	4TM-S1	Note 3
C65	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	Note 4
C66	3900	500	30130120	1464-004		UDS104		MC3463	MS-34	
C67	.25	600	30130130	884-25		PT6ES25		PT6025	6TM-P25	
C68	18		30121530	SI18	D6-180	SW5Q2	GP1K-180	UC-5415		
C69	390	500	30021510	1469-0004		SR5T4		MCB243	MS-34	
C70	390	500	30021950	1469-0004		SR5T4		MCB243	MS-34	
C71	.005	600	30120790	P688-005	D6-502	PT6SD5	GP2-333-502	PT625	6TM-D5	
C72	.1	600	30119250	P688-1	DF-104	PT6P1		PT601	6TM-P1	
C73	.5	200	30902190	P288-5		PJ2P5		PT405	2TM-P5	
C74	.047	200	30019580	P288-047		PT8S47		PT417	2TM-S47	
C75	5000		30015610	BPD-005	DD-502	TM5DS	81L-005	DC-525	5HK-D5	
C76	.01	600	30121200	P688-03		PT6S3		PT613	6TM-S3	
C77	500	20000	03121501	HV20C	TV3-502	MM-C20T1	413-501		20DK-T5	
C78	10000	1000	30119630							
C79	10000	1000	30119630							
C80	.01	400	30120580	P488-01	D6-103	PT4S1	GP2-333-103	PT411	4TM-S1	Note 1
C81	5000		30015610	BPD-005	DD-502	TM5DI	81L-005	DC-525	5HK-D5	

Note 1. Not used in all Models.
Note 2. Some Models use 300MMF in this application (Part #30104390)
Note 3. Some Models use .002 MFDin this application (Part #30120210)
Note 4. Some Models use .01MFD in this application (Part #30119780)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DUMONT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500Ω	½	0105300	QJ-381 *			UF13L	Contrast-Panel
B	1 Meg						UR16A	Volume- Rear
C	Switch						U8-26	Attach to R1B
R2A	1 Meg	½	01051100	Q11-137	AG-61-8	AB-89	U-54	Brightness
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	3 Meg	½	01051010	Q11-140	AG-65-8	AB-84	SU-59	Vert. Size
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R3A
R4A	1 Meg	½	01051100	Q11-137	AG-61-8	AB-89	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R4A
R5A	5000Ω	2	01024740	W-5000	A43-5000	VK-135	R5000L	Vert. Linearity-Wire Wound
B	Shaft		Not Req.	Not Req.	FK8-1/4	Not Req.	Not Req.	Attach to R5A
R6A	50KΩ	½	01052900	Q11-123	AG-44-8	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R6A
R7A	15KΩ	½	01044441	Q11-119	AG-32-8	Ab-22	U-26	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R7A
R8A	50KΩ	½	01051020	Q11-123	AG-44-8	AB-31	SU-35	AGC
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R8A

* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS AND SHAFTS B11-103 & P1-123 (Panel)
B13-137 & R1-202 (Rear)& SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: DUMONT PART No.	IRC PART No.	NOTES
R9	15KΩ	½	02032490		
R10	47KΩ	½	02032520		
R11	100KΩ	½	02032010		Note 1
R12	270KΩ	½	02032060		Note 2
R13	470Ω	½	02032400	BTS-470	
R14	180KΩ	½	02032040	BTS-180K	
R15	4700Ω	½	02031850	BTS-4700	Note 3
R16	4700Ω	½	02031850	BTS-4700	Note 1
R17	10KΩ	½	02032480		
R18	220KΩ	½	02032560		
R19	15KΩ	½	02032490		
R20	10KΩ	½	02032480		
R21	15KΩ	½	02032490		Note 4
R22	2300-5%	½		BTS-1300-5%	Note 5
R23	2300	½	02032390	BTS-330	Note 6
R24	82KΩ	½		BTS-82K	Note 7
R25	6800Ω	½	02031870		
R26	68Ω	½	02032350		
R27	1000Ω	½	02032420	BTS-1000	
R28	330Ω	½	02032390	BTS-330	
R29	22KΩ	2	02037830	BTB-22K	
R30	22KΩ	2	02037930	BTB-22K	
R31	27KΩ	½	02031940		
R32	68Ω	½	02032350		
R33	1000Ω	½	02032420	BTS-1000	
R34	330Ω	½	02032390	BTS-330	
R35	6800Ω	½	02031870		
R36	100Ω	½	02032360	BTS-100	
R37	330Ω	½	02032390	BTS-330	
R38	4700Ω	½	02031850	BTS-4700	
R39	1.5Meg	½	02032150	BTS-1.5Meg	
R40	33KΩ	½	02031950	BTS-33K	
R41	470Ω	½	02032400	BTS-470	
R42	22Ω	½	02032320		
R43	1800Ω	½	02031800	BTS-1800	
R44	5600Ω	10	02013390	1 3/4A-5600	
R45	270KΩ	½	02032080	BTS-270K	
R46	1 Meg	½	02032600	BTS-1 Meg	
R47	100KΩ	½	02032010	BTS-100K	
R48	1.5Meg	½	02032150	BTS-1.5Meg	
R49	470KΩ	½	02032090	BTS-470K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: DUMONT PART No.	IRC PART No.	NOTES
R50	470KΩ	½	02032580	BTS-470K	
R51	1000Ω	½	02032430	BTS-1000	
R52	390Ω	½	02031720	BTS-390	
R53	22KΩ	½	02031920	BTS-22K	
R54	680KΩ	½	02031870	BTS-680K	
R55	6800Ω	½	02031870	BTS-6800	
R56	10 Meg	½	02032880	BTS-10 Meg	
R57	470KΩ	½	02032580	BTS-470K	
R58	510K-5%	½	02031130	BTS-510K-5%	
R59	470KΩ	½	02032580	BTS-470K	Note 1
R60	470KΩ	½	02031120	BTS-470K	
R61	220Ω	2	02038380	BW-2-220	
R62	150KΩ-5%	½	02032030	BTS-150K-5%	
R63	12KΩ	½	02031900	BTS-12K	
R64	12KΩ	½	02031900	BTS-12K	
R65	6800Ω	½	02032470	BTB-6800	
R66	82KΩ	½	02032000	BTS-82K	
R67	39KΩ	½	02031960	BTS-39K	
R68	39KΩ	½	02031960	BTS-39K	
R69	10KΩ	½	02031480	BTS-10K	
R70	1.8Meg	½	02032180	BTS-1.8Meg	
R71	27KΩ	1	02034940	BTA-27K	
R72	27KΩ	½	02031940	BTS-27K	
R73	1 Meg	½	02032600	BTS-1 Meg	
R74	680Ω-5%	½	02030440	BTS-680-5%	
R75	1500Ω	½	02031190	BTS-1500	
R76	820Ω-5%	½	02030480	BTS-820-5%	
R77	22KΩ	½	02031920	BTS-22K	
R78	8200Ω	½	02031880	BTS-8200	
R79	8200Ω	½	02031880	BTS-8200	
R80	820KΩ	½		BTS-820K	Note 8
R81	1.2Meg	½		BTS-1.2Meg	Note 9
R82	1000Ω	½		BTB-1000	Note 1
R83	330KΩ	1	02035070	BTA-330K	
R84	82KΩ	1	02035000	BTA-82K	Note 1
R85	68KΩ	½		BTS-68K	Note 10
R86	10 Meg	1	02035250	BTA-10 Meg	Note 1
R87	18KΩ-5%	½		BTS-18K-5%	Note 11
R88	2.2Meg	½	02032620	BTS-2 2Meg	
R89	82Ω	1	02034760	BTA-820	
R90	47KΩ	1	02034970	BTA-47K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: DUMONT PART No.	IRC PART No.	NOTES
R91	100KΩ	1	02032010	BTS-100K	
R92	100KΩ	1	02032400	BTS-100K	
R93	4.7Meg	1	02032210	BTS-4.7Meg	
R94	220KΩ	2	02032050	BTS 220K	Note 12
R95	12Ω	1	02034540		
R96	180KΩ 5%	1	02030540	BTS 180K 5%	
R97	820KΩ 5%	1	02030730	BTS 820K 5%	
R98	68KΩ	1	02031900	BTS 68K	
R99	390KΩ	1	02032080	BTS 390K	
R100	100KΩ	1	02032010	BTS-100K	
R101	220KΩ	1	02032050	BTS-220K	
R102	12KΩ	1	02031900	BTS 12K	

Note 1. Not used in all models
Note 2. Some models use a 330KΩ resistor in this application
Note 3. Some models use a 2700Ω resistor in this application.
Note 4. Some models use a 10KΩ resistor in this application.
Note 5. Some models use a 1500Ω resistor in this application.
Note 6. Some models use a 330Ω resistor in this application
Note 7. Some models use a 47KΩ resistor in this application.
Note 8. Some models use a 560KΩ resistor in this application.
Note 9. Some models use a 1.8Meg resistor in this application.
Note 10. Some models use a 100KΩ resistor in this application.
Note 11. Some models use a 12KΩ resistor in this application.
Note 12 Some models use a 1 Meg resistor in this application.

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: DUMONT PART No.	IRC PART No.	NOTES
R103	12KΩ	½	02031900	BTS 12K	Note 1
R104	62000Ω 5%	1	02030670	BTS 6200 5%	
R105	470KΩ	1	02032580	BTS 470K	
R106	68Ω	1	02032350		
R107	150Ω	4	02121620	1 3/4A 150	
R108	15KΩ	2	02037910	BTB-15K	
R109	15KΩ	2	02037910	BTB-15K	
R110	3300Ω	2	02037830	BTB 3300	
R111	3 Ω	1	02100710		
R112	5300Ω	1	02035570		
R113	330KΩ	1	02035540	BTA 330K	
R114	39KΩ	1	02032020	BTS 120K	

TRANSFORMER (POWER)

ITEM No	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: DUMONT PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No
T1	117VAC	570VCT	5VAC	6.3VAC	20008031	P-8164	P-3077 ①	TP-225 ↓	
	60~ 62A	.210ADC	@ 3A	@ 6A					

↓ Drill new mounting holes.

TRANSFORMER (FILAMENT)

ITEM No	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: DUMONT PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No
T2	117VAC	6.3VAC			[redacted]				
	3.3 A	4. 2A			20005011 ②	P-8190	P-3074	F0-615H ↓	F-52X

① Drill one new mounting hole.
② Alternate filament trans.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC	REPLACEMENT DATA: DUMONT PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T3	422 tap A 32.7	36.6Ω tap A 3.6Ω, 11.6Ω	20008061			TFB-40	D-19	Horiz. Output Trans.
T4	1700Ω tap A 4.2Ω		20008021	A-8141	A-3039	TS0-12	A-104X	Vert. Output Trans.
T5A	36Ω		21011061			TY-7	Y-49	Horiz. Deflection Coils
B	45Ω							Vert. Deflection Coils

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES PRI.	RATING: DC RES SEC.	REPLACEMENT DATA: DUMONT PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T6	5KΩ	3.2Ω	300Ω	.65Ω	Part of Spkr	A-3849	A-3019	R0-304 ↓	S-5X	↓ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V C IMP	REPLACEMENT DATA: DUMONT PART No	VIKING PART No.	QUAM PART No	NOTES
SP1	10	PM	3.2Ω	18003481	10J11	10A31	

FILTER CHOKE

ITEM No	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D C RESISTANCE	RATINGS: INDUCTANCE @ CURRENT 1000 ~(~)	REPLACEMENT DATA: DUMONT PART No	STANCOR PART No.	MERIT PART No	CHICAGO PART No	TRIAD PART No
L1	.210A	44.6Ω	2 Hy.	21010951	C-3325	C-2991 ↓	TR-3300 ↓	C-25A ↓

↓ Drill one new mounting hole.

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA: DC RES PRI.	DC RES SEC.	DUMONT PART No	MERIT PART No	IRC PART No.	NOTES
L2	Ant. Coil	0Ω	0Ω	40012461			Channel 2
L3	Fil. Choke	0Ω		21010460			
L4	Neutralizing Coil	0Ω		21011090			

PARTS LIST AND DESCRIPTIONS (Continued)

RF-IF COILS (CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA DUMONT PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA IRC PART No.	NOTES
L5	RF, Mixer Grid & Osc. Coil	0Ω		40013481			Channel 2
L6	Fil. Choke	0Ω		21010470			
L7	RF Choke	0Ω		21010450			
L8	1st. Video IF	.9Ω		21011180	TV-102*		
L9	27.25MC trap	0Ω		21011032			
L10	2nd. Video IF	.4Ω	.4Ω	20008041			
L11	3rd. Video IF	.4Ω	.4Ω	20008041			
L12	Series Peaking Coil	1.8Ω		21011081	TV-180		12 Microhenries
L13	Series Peaking Coil	2.8Ω		21006621	TV-180		28 Microhenries
L14	Shunt Peaking Coil	18Ω		21006627	TV-188		370 Microhenries
L15	Shunt Peaking Coil	18Ω		21006627	TV-188		370 Microhenries
L16	4.5MC Trap	2Ω		21010131	TV-151		
L17	Series Peaking Coil	1.8Ω		21011081	TV-180		12 Microhenries
L18	Sound IF	5.5Ω		21011021	TV-151		
L19	Ratio Det.	5Ω	.6ΩCT	20006141	TV-115		Tertiary Winding - .6Ω
L20	RF Choke	.1Ω					Not used in all Models.
L21	RF Choke	.59Ω				CLA	.82 Microhenry -Not used in all Models
L22	RF Choke	.59Ω				CLA	.82 Microhenry -Not used in all Models
L23	Horiz. Osc.	60Ω		21010991	TV-163		
L24	RF Choke	1.8Ω		21006280		CLA	2.2 Microhenries
L25	Horiz. Lin.	5.7Ω		21011001			Tapped @ 4.2Ω
L26	Width Coil	6Ω		21011011			
L27	RF Choke	2.8Ω		21006520		CL-1	4.7 Microhenries

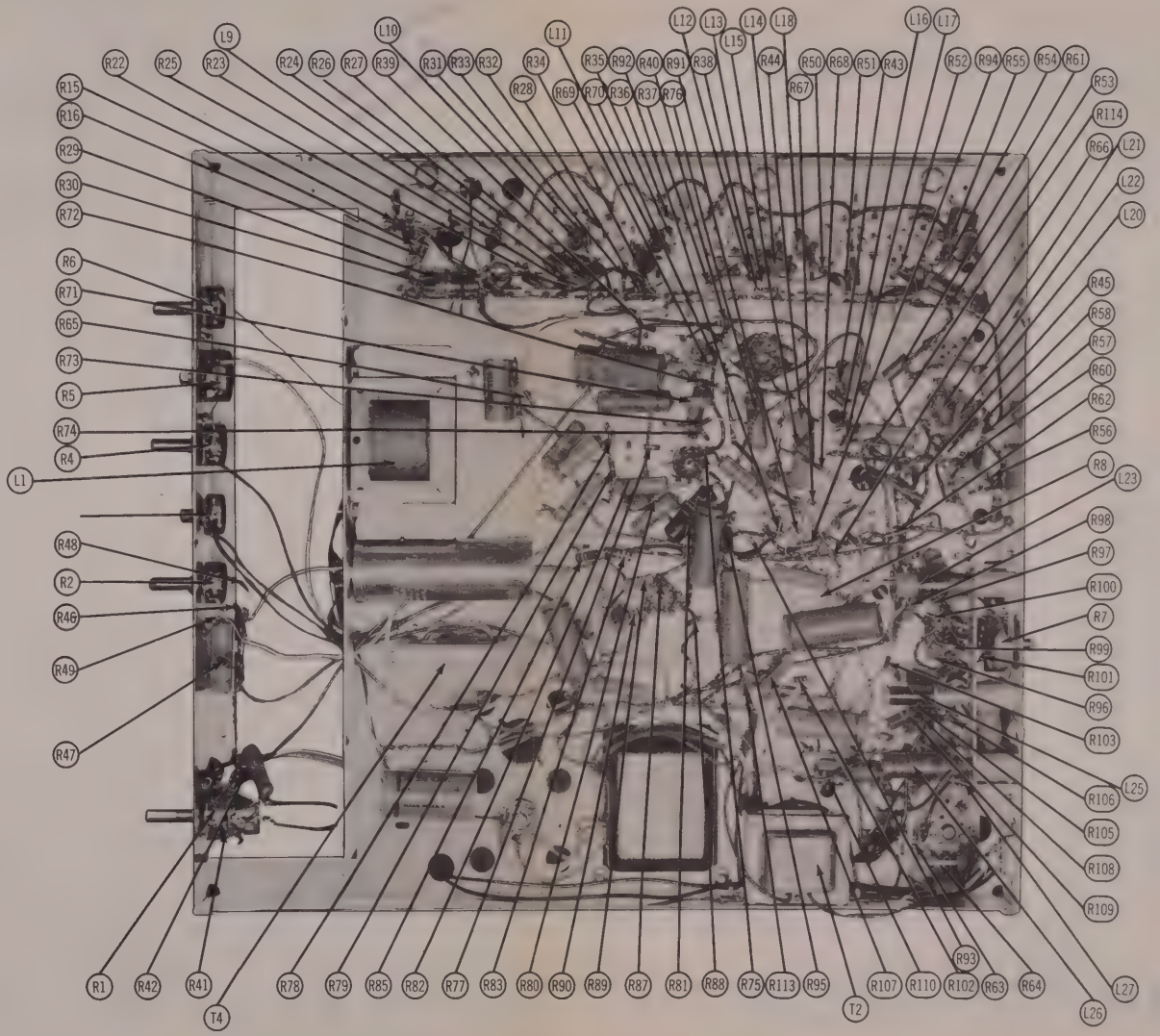
* Enlarge mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA DUMONT PART No. FUSE	DUMONT PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	GJV	1/4A 250V.	11000720	11000600	312.250	357001	AGC-1/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	DUMONT PART No.	NOTES
M2	RF Tuner	21010781	
M3	4th. Video IF Capacitor, Capacitor, Crystal (1N60)	26001081	Video Detector Assembly
M4	Centering Magnet	29000651	
M5	Ion Trap	29000661	
	Antenna Coils	40013462	Channel #3
	Antenna Coils	40013463	Channel #4
	Antenna Coils	40013464	Channel #5
	Antenna Coils	40013465	Channel #6
	Antenna Coils	40013466	Channel #7
	Antenna Coils	40013467	Channel #8
	Antenna Coils	40013468	Channel #9
	Antenna Coils	40013469	Channel #10
	Antenna Coils	40013471	Channel #11
	Antenna Coils	40013472	Channel #12
	Antenna Coils	40013473	Channel #13
	RF, Mixer Grid & Osc. Coil	40013482	Channel #3
	RF, Mixer Grid & Osc. Coil	40013483	Channel #4
	RF, Mixer Grid & Osc. Coil	40013484	Channel #5
	RF, Mixer Grid & Osc. Coil	40013485	Channel #6
	RF, Mixer Grid & Osc. Coil	40013486	Channel #7
	RF, Mixer Grid & Osc. Coil	40013487	Channel #8
	RF, Mixer Grid & Osc. Coil	40013488	Channel #9
	RF, Mixer Grid & Osc. Coil	40013489	Channel #10
	RF, Mixer Grid & Osc. Coil	40013491	Channel #11
	RF, Mixer Grid & Osc. Coil	40013492	Channel #12
	RF, Mixer Grid & Osc. Coil	40013493	Channel #13
	Knob	45004012	Fine Tuning (Ch. RA-165)
	Knob	45004022	Contrast (Ch. RA-165)
	Knob	45004031	Channel Selector (Mahogany)
	Knob	45004032	Channel Selector (Blonde) (Ch. RA-165)
	Knob	45004041	Off/on Volume (Mahogany)
	Knob	45004042	Off/on Volume (Blonde) (Ch. RA-165)
	Knob	45004011	Fine Tuning (Ch. RA-164)
	Knob	45004021	Contrast (Ch. RA-164)
	Back Cover	32002731	
	Safety Glass	45004001	Ch. RA-165
	Safety Glass	45004061	Ch. RA-164
	Control Door	42006661	



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DENVER, COLORADO

EKOTAPE
MODELS 114, 115, 116, 117

Figure 1

EKOTAPE
MODELS 114, 115, 116, 117

GENERAL INFORMATION

The Webster Electric Ekotape Recorder Models 114, 115, 116 and 117 are designed to magnetically record and play back a recording on a standard 5" or 7" reel of recording tape.

Models 114 and 115 record at a constant speed of 3-3/4" per second and the Models 116 and 117 record at 7-1/2" per second.

The Ekotape is designed to record two tracks of sound on a standard reel of tape. This allows two full, one hour programs to be recorded on a 7" reel, with the Models 114 and 115. Two half-hour programs may be recorded on a 7" reel, with Models 116 and 117

The mechanical units incorporate a single control which operates the following functions: "Rewind-Stop-Forward" and "Fast Forward". There are three amplifier controls: Volume control for recording and playback, Play-and-Record selector control, and the On-Off-Tone control.

Manufactured by:

Webster Electric Company
Racine, Wisconsin

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

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DESCRIPTION OF MODELS

The Ekotape Models 114, 115, 116 and 117, described in this manual, are all of the same basic design and construction. All are portable models and include the same accessories. Model 114 is the basic unit; all other models have slight variations and are described in the following paragraphs.

Model 114 operates on 117 volts at 60 cycles per second with a tape speed of 3-3/4" per second.

Model 115 operates on 115/230 volts at 50 cycles per second. Tape speed is 3-3/4" per second. The amplifier is the same as Model 114, except a larger power transformer is used which incorporates a tapped primary for selection of 115 or 230 volt operation. For 115 volt operation it is necessary to move one wire in the amplifier (see paragraph on "Changing from 230 volts to 115 volts"). The motor pulley is larger and the flywheel tire is smaller on this model than on Model 114.

Model 116 operates on 117 volts at 60 cycles per second. Tape speed is 7-1/2" per second. Mechanically, this model is the same as Model 114, except motor pulley to flywheel tire ratio is different, to give faster tape speed. The amplifier has some differences from Model 114 to accommodate the increased tape speed (see schematic on page 10).

Model 117 operates on 115/230 volts at 50 cycles per second. Tape speed is 7-1/2" per second. The amplifier is the same as Model 116, except a larger power transformer is used, which incorporates a tapped primary for selection of 115 or 230 volt operation. Units are shipped for 230 volt operation. For 115 volt operation it is necessary to move one wire in the amplifier (see paragraph on "Changing from 230 volts to 115 volts").

Foot Control -

Ekotape Models 114, 115, 116 and 117 are furnished with foot switches as optional equipment. All of these models contain, as standard equipment, the necessary internal mechanism (19) and clips at the back of the top panel for attaching the foot switch (Part No. 242-16340). With the foot switch cable attached to the clips, the control handle (8) may be left in "Play" or "Record" position and the forward motion of the tape controlled entirely through operation of the foot switch. The foot switch starts and stops the tape instantly, making it easy to edit and cue recorded material and to omit undesirable material during recording.

OPERATING INSTRUCTIONS

Preparing the Ekotape for Recording -

1. Insert the power cord into a convenient receptacle of the proper rating.

2. Make sure the control handle (8) is in the "Off" position.

3. Place a reel of tape on the left hand spindle, supply spindle (3), in a manner so that the tape will unwind in a clockwise direction.

NOTE: This recorder uses Type "A" wound tape i.e. the dull magnetic coated side faces inward. If the tape to be used is Type "B" (coated side facing outward), place the reel of tape on the right hand spindle so that the tape will lead off in a clockwise direction. Thread the tape onto the left hand reel as described in paragraph "To Rewind". Place the control handle (8) in "Rewind" and allow the full reel of tape to wind on the empty reel. The dull magnetic side of the tape will now be facing inward.

4. Place an empty reel on the right hand spindle, take-up spindle (7).

NOTE: When placing reels on the spindles, make sure that the locating pins on the spindles engage with the slots in the reels.

5. Thread the tape as shown in Figure 2. The solid line is the position in which tape is to be threaded for recording and playback. After the tape is threaded on the empty reel, use a pencil to hold the tape in place and rotate the reel clockwise until the tape is secured to the reel.

To Make a Recording -

1. After the recording tape has been properly threaded, turn the "On-Off-Tone" control to the "On" position.

2. Turn the control handle (8) to the "Forward" setting.

3. Turn the Record-Play selector knob to the "Record" position.

NOTE: The selector knob will stay in the "Record" position only when the control handle (8) is in the "Forward" position. It is not necessary to set the selector knob for playing a recording, since it is normally in the proper position. It automatically returns from "Record" position to "Play" position whenever the control handle (8) is moved from the "Forward" position, to prevent accidental erasure of recordings.

4. Turn the "Volume" control clockwise until the incoming signal causes the "Record Indicator" to flicker occasionally. A recording is now being made on the tape.

To Record from Microphone -

1. Insert the microphone plug into the "Mic." jack, located on the left side of the case.

2. When recording from microphone, follow the instructions under the heading "To Make a Recording".

3. Place the microphone 10 to 24 inches from the source of the sound to be recorded.

NOTE: The microphone should be kept at least three feet away from the loudspeaker, unless the speaker is switched off to prevent feedback. The Ekotape speaker can be silenced by placing the speaker switch, located in the

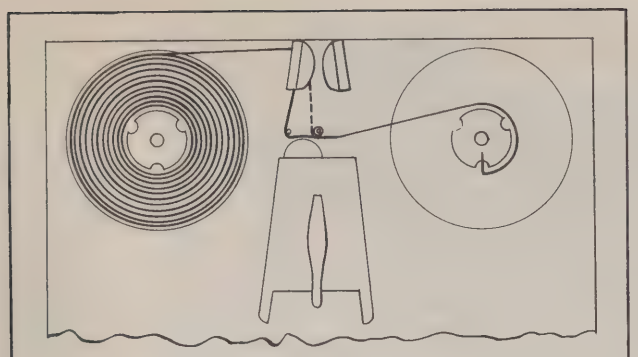


Figure 2

THREADING OF TAPE

Solid line indicates position of tape for "Record" and "Playback". Dotted section shows how tape is to be threaded for "Rewind" and "Fast-Forward".

recessed plate on the right side of the case, in the "Off" position.

To Record from Radio -

1. Plug the radio cord attachment into the jack marked "Radio-Phono".

2. Attach the two alligator clips on the end of the cord to the terminals of the voice coil on your radio speaker.

3. Set the radio for soft playing, then operate the Ekotape controls as described under "To Make a Recording".

NOTE: In the event that a hum should develop, either during recording or playback, reverse the clip-on connections to the speaker voice coil terminals.

To Record from Phonograph -

1. To record from a phonograph, connect the alligator clips of the radio cord attachment, to the ends of the pickup leads of the phonograph; then plug the other end of the attachment into the "Radio-Phono" jack.

2. To make a recording from a phonograph, or radio-phonograph combination, connect the alligator clips across the vice coil ternimals on the speaker, turn the radio on and then turn the radio-phono selector to phono position. Set the radio for soft playing, then adjust the Ekotape controls as described under "To Make a Recording".

To Rewind -

1. Before attempting to rewind the tape, rethread tape as shown by dotted line in Figure 2.

2. Turn control handle (8) to "Rewind".

Twin Track Operation -

NOTE: Models 114, 115, 116 and 117 are twin-track units, which record approximately half the width of the tape at one time. Since it is impossible to edit and splice one "track" without affecting the other, recordings which are to be edited should be limited to one track only.

1. To record a second program on the same tape, lift the full reel from the right hand spindle and turn it upside down on the left hand spindle.

2. Place the empty reel on the right hand spindle; thread the tape as shown in Figure 2, and continue your recording as described under "To Make a Recording".

To Play a Recording -

1. With the tape properly threaded, turn the control handle (8) to the "Forward" position.

2. Adjust the "Volume" and "Tone" controls to suit.

3. Be sure the speaker "On-Off" switch, located on the right side of the case, is in the "On" position.

Fast Forward -

1. If any portion of the tape is to be skipped, it may be done by turning the control handle (8) to "Fast Forward". While this "Fast Forward" operates with tape in the normal playing position, maximum speed (approximately twenty times normal playing speed on the Models 114 and 115, and ten times normal playing speed on the Models 116 and 117) can be obtained by rethreading the tape as indicated by the dotted line in Figure 2.

To Use an External Speaker -

1. Connect the alligator clips of the radio cord attachment to the voice coil terminals on the external speaker; then insert the plug into the "External Speaker" jack, located on the right side of the case.

2. Be sure the "On-Off" speaker switch is in the "On" position.

NOTE: When the attachment cord is plugged into the "External Speaker" jack, the Ekotape speaker is automatically cut out.

Changing from 230 Volts to 115 Volts -

Models 115 and 117 have a power transformer tapped for 115 or 230 volt operation. Both models are shipped connected for 230 volt operation. To change from 230 to 115 volt operation, change one connection in the amplifier as follows:

The black wire coming from the fuse holder is connected to a lug on a terminal strip in the chassis. This lug is connected to a red wire coming from the power transformer. This is the 230 volt connection.

There is another lug on the terminal strip which is connected by a blue wire to the power transformer. For 115 volt operation remove the black wire from the lug with the red transformer wire and resolder it on the lug with the blue transformer wire.

After changing to 115 volt operation, mark the nameplate in the cover of the carrying case for future reference when servicing is required.

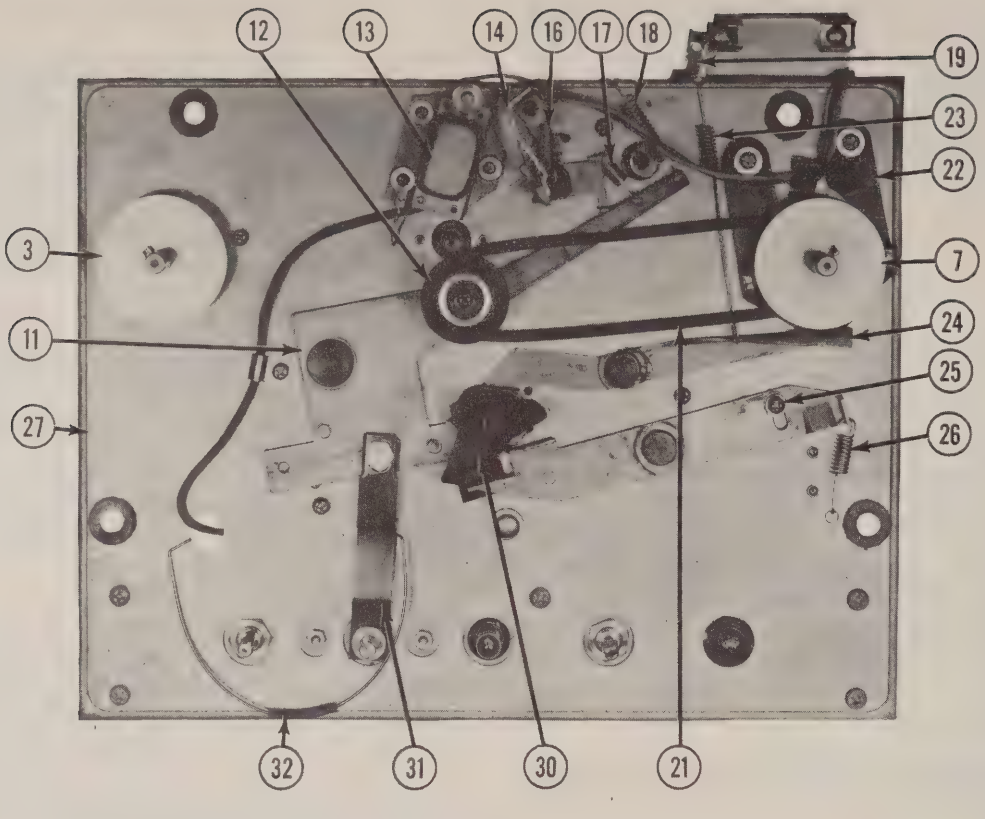


Figure 3

Removing Unit from Case -

All service work except cleaning the head assembly requires removal of the unit from the carrying case.

1. To remove the unit, remove the screws in the corners of the top plate (54) and carefully lift out the complete unit.

2. Disconnect the speaker and the input plugs; then lift the unit free.

3. When replacing the unit, connect the plugs and be sure the power cord is looped under the speaker to clear all moving parts and is in the slot in the case before lowering the unit in place.

Removing the Top Plate -

In order to gain access to the operating mechanism, the top plate (54) must be removed.

1. Pull off the Volume and Tone control knobs.

2. Loosen the set screw in the Selector knob and control handle (8), and remove.

3. Remove the head cover (6).

4. The top plate (54) is rubber mounted on the mechanism mounting plate (27) and held in place by four screws located under the mechanism mounting plate. After removing the four screws, pivot the pressure pad assembly (14) so as to clear the hole in the top plate. While holding in this position, carefully work the top plate off the rubber mounts.

Replacing Forward Take-up Belt (21) -

The forward take-up belt (21) is located under the top plate; therefore, the unit must be removed from the carrying case and the top plate (54) removed (see "Removing the Top Plate"), after the top plate has been removed, loosen the set screw in the fast forward pulley (42); then remove reel shaft (7). Remove pulley assembly (20) and work belt over the pinch roller (12).

Work new belt over pinch roller. Place the belt in the groove of the pulley assembly (20) and replace the pulley assembly (20), reel shaft (7) and fast forward pulley (42). With the mechanism in the "Forward" position, press down lightly on the reel shaft and tighten the set screw in the fast forward pulley (42), leaving a clearance of .010 to .015" between the pulley (42) and bearing.

Motor Adjustment -

The drive clearance of the motor must be carefully adjusted so the mechanism will function properly in all control knob positions.

With all springs attached, make the following adjustments: (see Figure 5 and exploded view)

1. "Fast Forward" position: The fast forward drive belt (44) should engage the motor pulley (51) and the fast forward pulley (42), with the kick-out lever (56) clear of the fast forward plate and pulley assembly (43). The trip pin (X) in the fast forward drive mechanism should engage the brake trip of the trip assembly (57), passing beyond the dog (Y) of the brake trip, not exceeding 1/16". This prevents overrun, or looping of the tape when going from "Fast

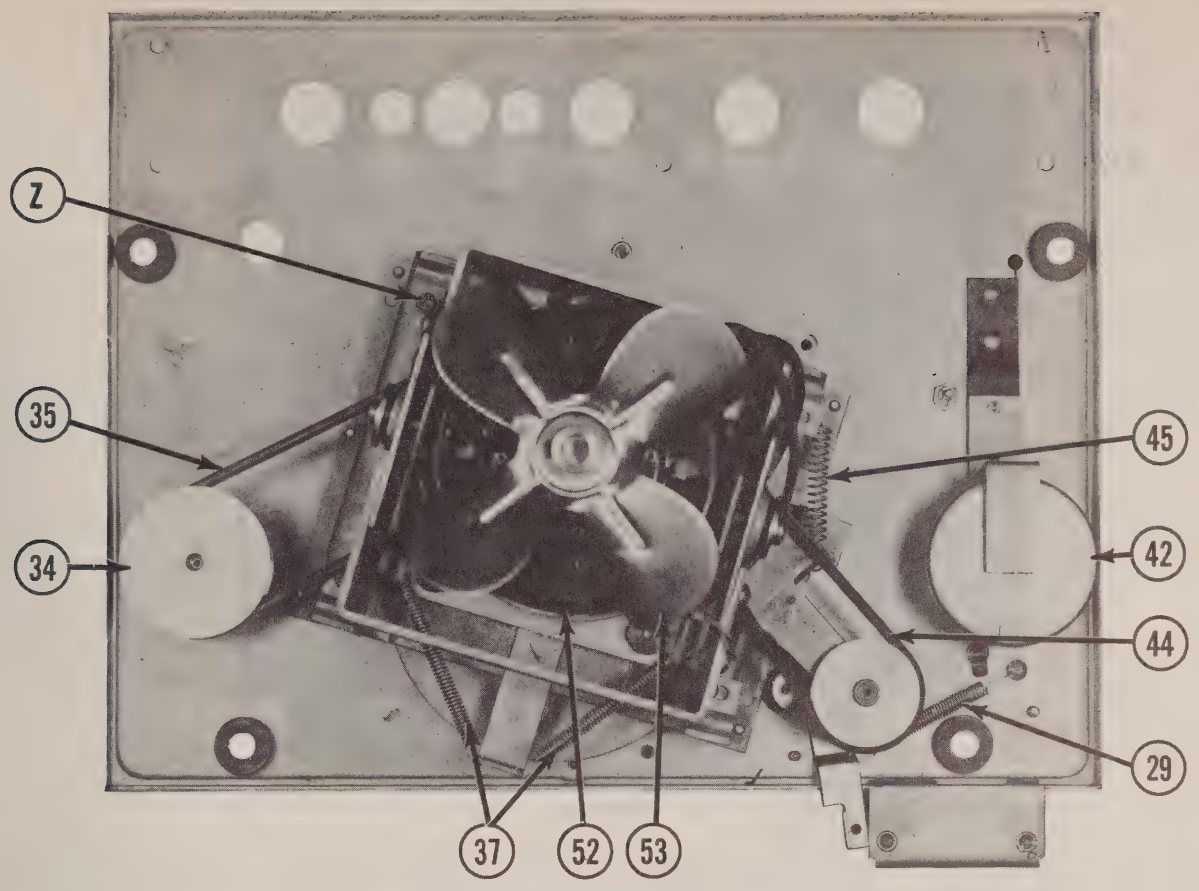


Figure 4

Forward" to "Forward".

To correct any misalignment of above, loosen the four mounting screws (Z), see Figure 4, and with all springs attached and mechanism in "Fast Forward" position, make adjustments by shifting the motor bracket in the slotted mounting holes. After the proper adjustment is made, tighten the four screws.

NOTE: Check the fast forward brake spring (55) to see that a clearance of approximately 3/64" exists between the brake spring (51) and rewind belt (35) in the "Fast Forward" and "Forward" positions.

2. In the "Stop" position, the motor drive pulley (51) should not touch any part.

3. In the "Rewind" position, the motor pulley should engage the rewind belt (35). If an adjustment is necessary, it can be made by slightly bending the rocker arm bracket.

4. In the "Forward" position, the motor pulley should engage the flywheel tire only. Adjustment is made by moving the motor bracket in the slotted mounting holes.

Record Lock Arm Adjustment -

The record lock arm (31) locks the "Selector" knob in the "Record" position only when the control handle (8) is turned to "Forward". The lock arm automatically returns the "Selector" knob to the "Play" position when the control handle is turned to any other position. This is accomplished by the movement of the pinch roller lever (11), which is actuated by the control handle (8), causing the index ball bearing to slip out of the detent of the roller lever (11). The spring (32) then automatically pivots the lock arm (31) and "Selector" knob to "Play" position. This is a safety feature to prevent a recording from being accidently erased.

1. To adjust the lock arm, set the control handle (8) in "Forward".

2. Remove spring (32) from the lock arm.

3. Loosen the set screws holding the lock arm (31) to the "Selector" shaft.

4. Turn the "Selector" shaft to its extreme counterclockwise position.

5. Move the lock arm (31) so that the index ball will engage the index hole in the pinch roller lever and shaft assembly (11); then move the lock arm approximately 1/16" farther counterclockwise, and tighten the set screws.

6. Replace spring (32).

Fast Forward Rewind
Lift Lever Adjustment -

1. Place control handle (8) in "Forward" position.

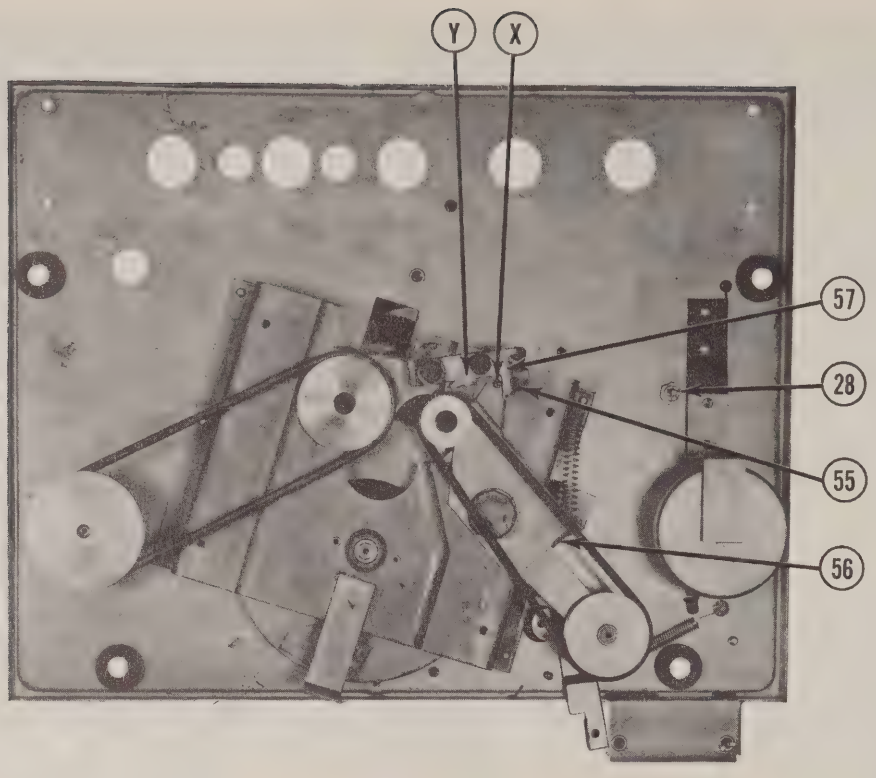


Figure 5

2. Turn adjusting screw (25) while holding lock nut (28), until clearance between lever and ball in pulley (42) is 1/16 to 1/32".

3. Turn control handle (8) to "Rewind" position and check to be sure lever (58), Figure 5, lifts take-up spindle (7).

4. Hold adjustment screw (25) in position with a screw driver and tighten lock nut (28).

TROUBLES AND REMEDIES

Motor and Amplifier Do Not Operate When Tone Control Switch Is Turned On -

1. Check fuse (M1) to see if it has blown. The fuse is located on the right side of the top plate.

2. Check to see if power is reaching recorder.

3. Damaged power cord.

(a) Repair or replace.

4. Damaged "On-Off-Tone" control switch:

(a) Replace tone control and switch assembly.

Recorded Sound Is Faint, Fuzzy, Distorted or No Sound At All -

1. Dirty head:

(a) Check the recording head (13) to see if it is dirty. The recording head is subject to an accumulation of tape coating residue, which is worn off the tape as it passes the head. This should be periodically removed since it may cause faint recordings and poor playback. Wipe off the record and erase head contact surfaces carefully with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen the cloth slightly with carbon tetrachloride.

NOTE: Do not use a brush or excessive amount of solvent on the pole surfaces.

2. Pressure pad spring (16) loose or missing.

(a) The pressure pad lever assembly (14) should apply pressure against the tape, thus holding the tape tightly against the recording head. If this is not true, check the pressure pad spring (16); if loose or missing, replace.

3. Worn or dirty pressure pad:

(a) Replace or clean pressure pad assembly (14).

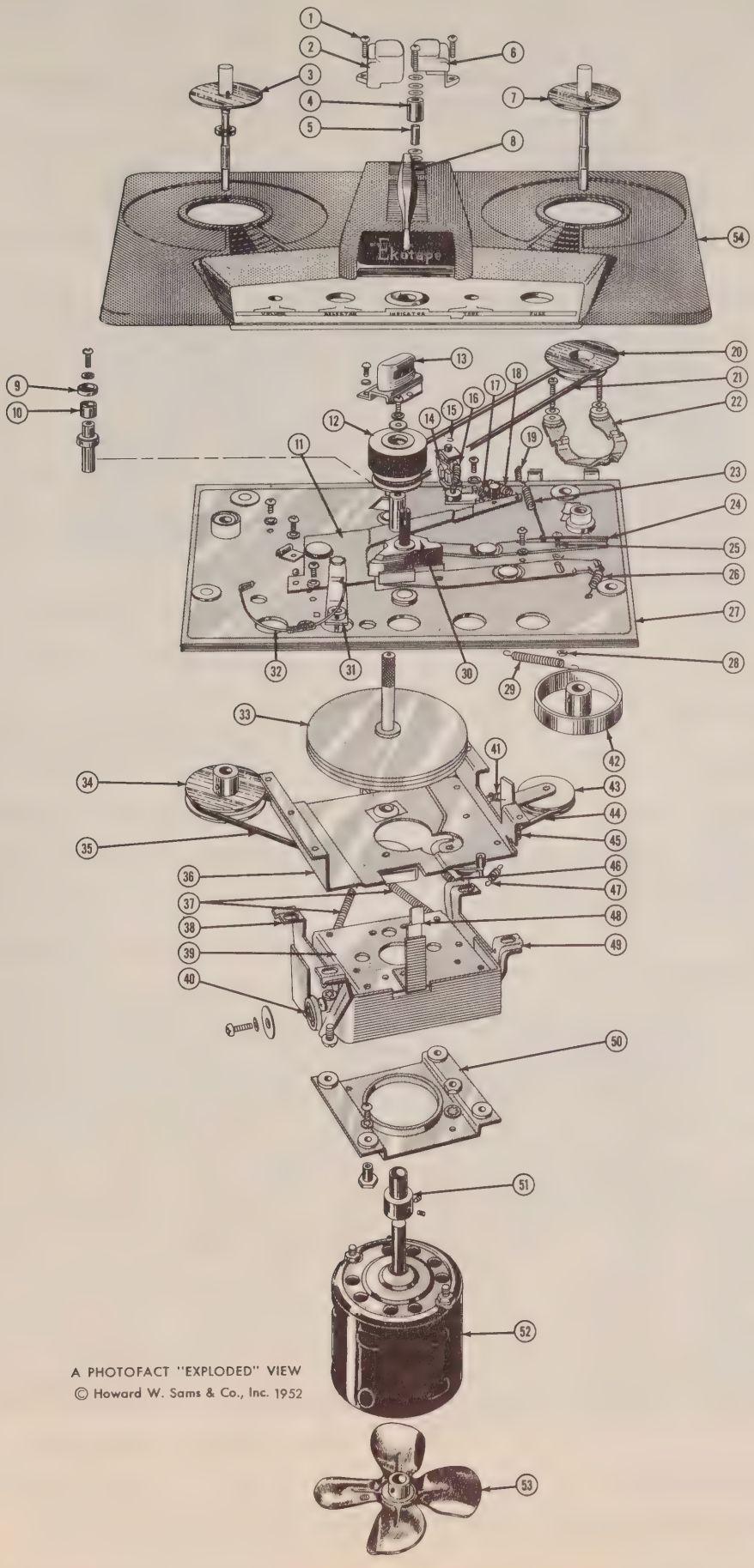
4. Amplifier trouble.

5. Over-recorded or under-recorded tape:

(a) Correct recording volume is very important. Too weak a signal, which does not cause the record level indicator to flicker, will result in weak playback. Too strong a signal, causing the indicator to glow continuously, will result in distortion during playback.

Failure of Tape Erasing -

1. Check to see if the head assembly (13) is properly aligned:



A PHOTOFACT "EXPLODED" VIEW

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(a) If the head assembly is loose, or if it has been replaced, it will be necessary to align the head for optimum output level and maximum high frequency response. If a constant frequency response tape is not available, play back a tape previously recorded; then adjust the three recording head mounting screws for maximum high frequency response.

2. Dirty head:

(a) Clean with soft cloth and carbon tetrachloride.

3. Pressure pad spring loose:

(a) Replace

4. Pressure pads worn:

(a) Replace.

5. Oscillator coil assembly or tube not operating:

(a) Replace oscillator coil (L2) or tube (V5).

6. Defective erase coil in head:

(a) Replace head (13).

Failure to Record -

1. Record coil open:

(a) Replace head (13).

2. Insufficient bias voltage:

(a) Check bias voltage across head with AC vacuum tube voltmeter. There should be approximately 100 volts; if low, check bias oscillator circuit.

3. Pressure pad assembly (14) not holding tape against lamination on the recording head:

(a) Pressure pads worn. Replace.

(b) Pressure pad spring (16) loose. Replace.

4. Recording head loose:

(a) Play back a recording that is known to be good, and adjust the head as described under "Failure of Tape Erasing".

Will Not Play Back -

1. Open coil in head:

(a) Replace recording head.

2. Pressure pad assembly (14) not functioning properly:

(a) Pressure pad spring (16) loose. Replace.

(b) Pressure pads worn. Replace.

3. Dirty recording head:

(a) Clean head as described under "Recorded Sound Is Faint, Fuzzy, Distorted or No Sound At All".

Take-up Reel (7) Does Not Take-up Tape in Play Position -

1. Take-up belt (21) broken or stretched:

(a) Replace.

2. Pinch roller spring (18) broken or not connected.

(a) If this spring is loose, the pinch roller lever (11) will not be actuated, thereby preventing the pinch roller (12) from contacting the flywheel capstan and, in turn, not driving the take-up spindle (7).

3. Motor springs (37) not connected:

(a) Connect springs or replace if broken.

4. Lift lever spring (26) loose or broken.

(a) Replace.

Fast Forward Does Not Operate -

1. Fast forward mechanism spring (45) loose or broken:

(a) If this spring is not connected, the fast forward pulley and arm assembly (43) will not engage pulley (42); replace the spring.

2. Fast forward belt (44) broken or stretched:

(a) Replace belt.

3. Fast forward pulley (42) loose on shaft:

(a) Tighten set screw in pulley (42).

4. Motor out of adjustment:

(a) See "Motor Adjustment".

Tape Overruns from Rewind to Stop -

1. Brake lever spring (23) loose or broken:

(a) Replace spring.

2. Fast forward pulley (42) and spindle shaft (7) out of adjustment:

(a) See "Fast Forward-Rewind Lift Lever Adjustment".

3. Pads on brake yoke (22) worn or missing:

(a) Replace brake pads.

"Wows" Caused by Tape Slipping -

1. Worn or damaged pinch roller (12):

(a) Replace.

2. Pinch roller spring (18) too weak:

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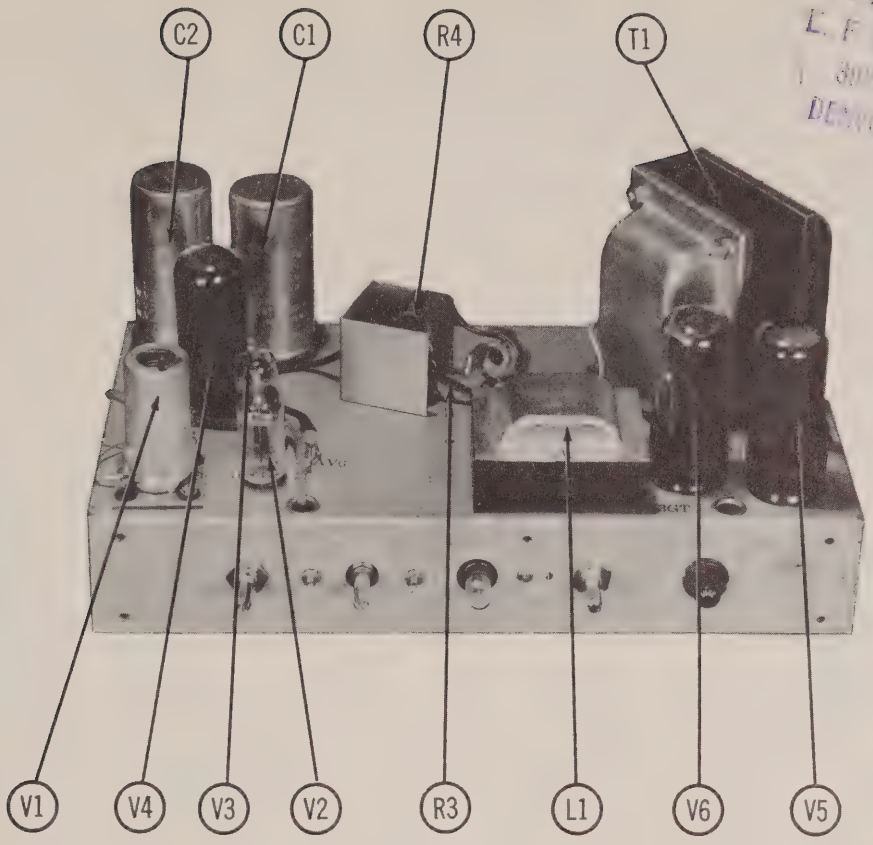


Figure 6

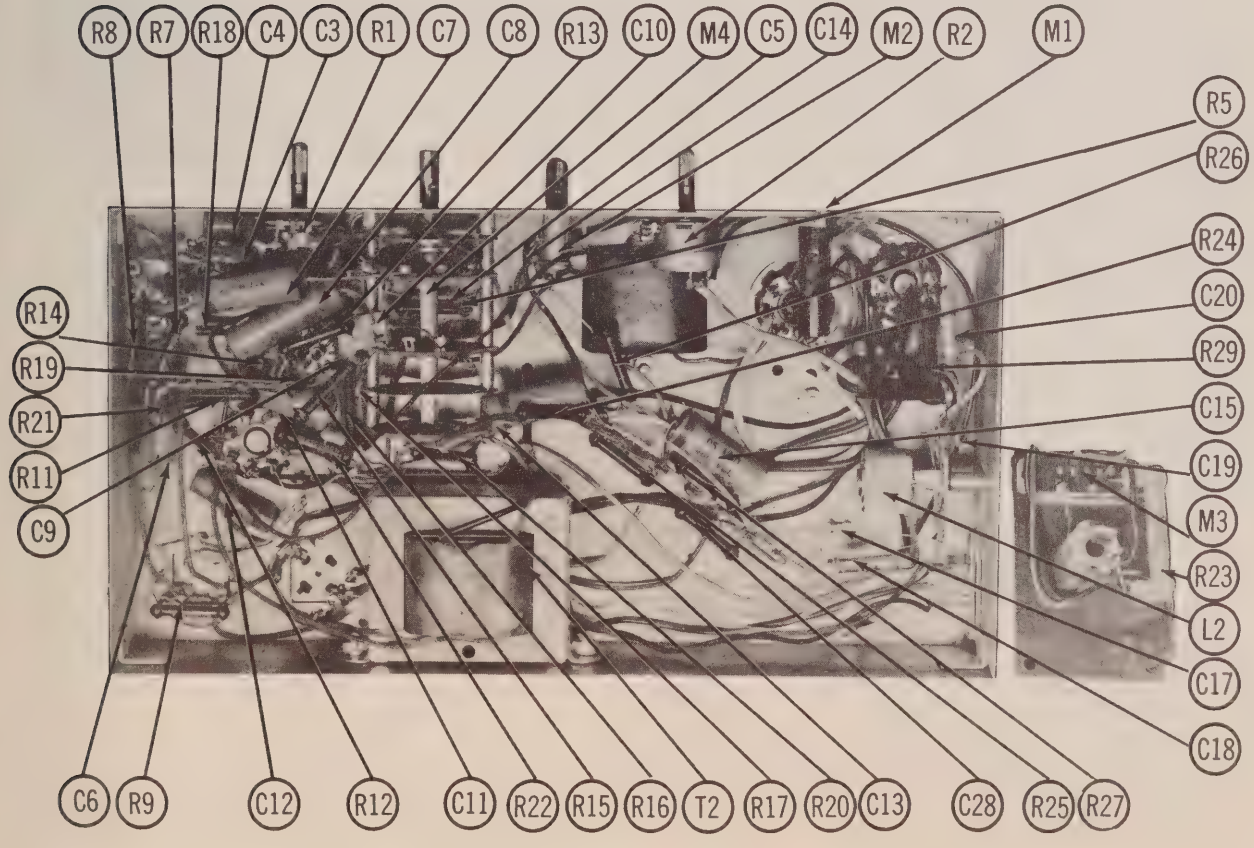
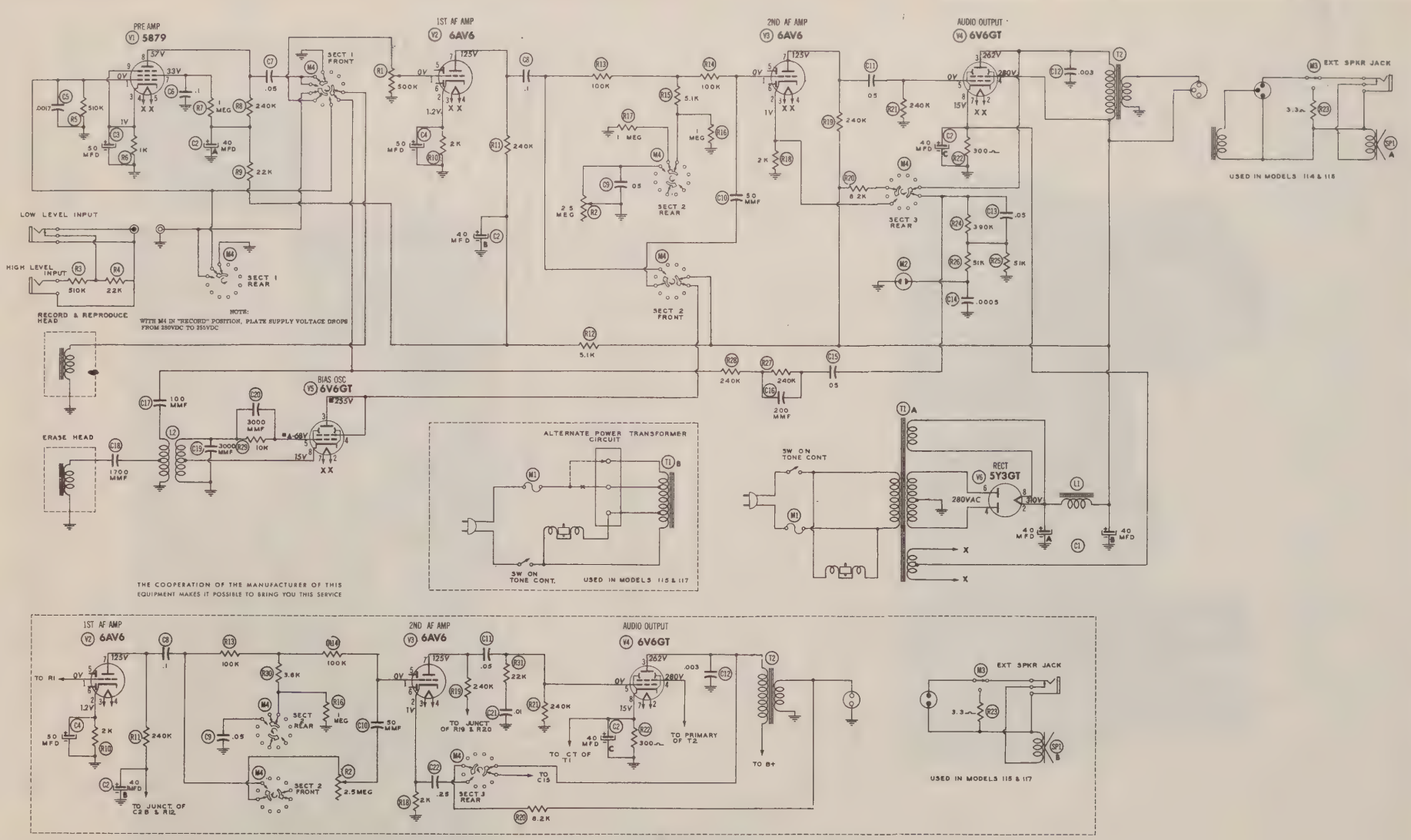


Figure 7



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	5879	33Ω	INF	1KΩ	300Ω	300Ω	INF	† 1Meg.	† 270KΩ	1KΩ
V 2	*6AV6	17Ω	2. KΩ	300Ω	300Ω	INF	INF	† 245KΩ		
V 3	6AV6	1. 1Meg	2KΩ	300Ω	300Ω	INF	INF	† 240KΩ		
V 4	6V6GT	0Ω	300Ω	† 1KΩ	† 475Ω	240KΩ	INF	300Ω	300Ω	
V 5	6V6GT	0Ω	300Ω	† ≈ 475Ω	† ≈ 475Ω	10KΩ	10KΩ	300Ω	7. 5Ω	
V 6	5Y3GT	INF	1KΩ	INF	47. 5Ω	INF	16. 5Ω	INF	1KΩ	

ALL MEASUREMENTS TAKEN WITH M4 IN "REPRODUCE" POSITION UNLESS NOTED.
† MEASURED FROM PIN 3, V6.
≈ MEASURED WITH M4 IN "RECORD" POSITION.
* TAKEN WITH VACUUM TUBE VOLTMETER.

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(a) Replace.

3. Motor out of adjustment:

(a) See "Motor Adjustment".

LUBRICATION

All moving parts of this recorder are located in self lubricated oilite bearings, therefore, in normal use, no lubrication is necessary. When unit is disassembled for repair, clean all bearings and lubricate with light oil. If cam and lever actions become sluggish and slow to respond, it may be due to gum or dirt in the pivots and under the levers. To clean and lubricate the levers, remove the top plate. Clean off all old lubricant, accumulated dirt and gum with a clean cloth and cleaning solvent. Apply lubricant in thin film on working surfaces only. Do not overlubricate.

Lubricants to Use -

1. Oilite bearings--light machine or spindle oil.

2. Moving parts--Wadhams BRB#1 or Lubriplate.

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
V1	5879	5879, Pre-Amplifier
V2	6AV6	6AV6, 1st AF Amplifier
V3	6AV6	6AV6, 2nd AF Amplifier
V4	6V6GT	6V6GT, Power Output
V5	6V6GT	6V6GT, Bias Oscillator
V6	5Y3GT	5Y3GT, Rectifier
C1A	241-14236	Filter, 40 mfd. @ 450 V
C1B		Filter, 40 mfd. @ 450 V
C2A	241-14238	Decoupling, 40 mfd. @ 450 V
C2B		Decoupling, 40 mfd. @ 450 V
C2C		Output Decoupling, 40 mfd. @ 25 V
C3	S6063	Pre-Amplifier Cathode, 50 mfd. @ 6 V
C4	S6063	1st AF Amplifier Cathode, 50 mfd. @ 6 V
C5	241-14260-2	Tone Compensation, .0017 mfd. @ 500 V (Models 116 and 117 use .0005 mfd. in this application.)
C6	S3595	Pre-Amplifier Screen, .1 mfd. @ 400 V
C7	S4261	Audio Coupling, .05 mfd. @ 400 V
C8	S3595	Audio Coupling, .1 mfd. @ 400 V
C9	S4261	Tone Compensation, .05 mfd. @ 400 V
C10	29670-2	Tone Compensation, 50 mmf. @ 500 V
C11	S4261	Audio Coupling, .05 mfd. @ 400 V
C12	241-14260-1	Output Plate Bypass, .003 mfd. @ 500 V
C13	S4261	Indicator Coupling, .05 mfd. @ 400 V
C14	S4556	Indicator Filter, .0005 mfd. @ 600 V
C15	S4261	Audio Coupling, .05 mfd. @ 400 V
C16	29670-4	Tone Compensation, 200 mmf. @ 500 V
C17	S6065-5	Oscillator Coupling, 100 mmf. @ 500 V
C18	241-14260-2	Oscillator Coupling, 1700 mmf. @ 500 V
C19	241-14260-1	Fixed Trimmer, 3000 mmf. @ 500 V
C20	241-14260-1	Oscillator Grid Cap., 3000 mmf. @ 500 V
C21	S3521	Tone Compensation, .01 mfd. @ 400 V
C22	241-14974	AF Feedback, .25 mfd. @ 150 V (Used in some 116, 117 models)
R1	241-14233	Volume Control, 500KΩ, 1/2 W
R2	241-14234	Tone Control and Switch, 2.5 Meg. 1/2 W Used on Models 114, 115 only (Models 116, 117 use Part No. 241-14234-1)
R3	29501-53	Series High Level Input, 510KΩ, 1/2 W
R4	29501-29	Tone Compensation, 22KΩ, 1/2 W
R5	29501-53	Pre-Amplifier Grid, 510KΩ, 1/2 W
R6	29501-11	Pre-Amplifier Cathode, 1000Ω, 1/2 W
R7	29501-57	Pre-Amplifier Screen, 1 Meg., 1/2 W
R8	29501-48	Pre-Amplifier Plate, 240KΩ, 1/2 W
R9	29501-29	Pre-Amplifier Decoupling, 22KΩ, 1/2 W
R10	29501-14	1st AF Amplifier Cathode, 2000Ω, 1/2 W
R11	29501-48	1st AF Amplifier Plate, 240KΩ, 1/2 W
R12	29501-21	Decoupling, 5100Ω, 1/2 W
R13	29501-41	Tone Compensation, 100KΩ, 1/2 W
R14	29501-41	Tone Compensation, 100KΩ, 1/2 W
R15	29501-21	2nd AF Amplifier Grid, 5100Ω, 1/2 W Used in Models 114, 115 only. (Models 116, 117 use R30 in this application.)
R16	29501-57	2nd AF Amplifier Grid, 1 Meg., 1/2 W
R17	29501-35	2nd AF Amplifier Grid, 150KΩ, 1/2 W (Used in Models 114, 115 only.)
R18	29501-14	2nd AF Amplifier Cathode, 2000Ω, 1/2 W
R19	29501-48	2nd AF Amplifier Plate, 240KΩ, 1/2 W
R20	29501-23	Feedback, 8200Ω, 1/2 W
R21	29501-48	Output Grid, 240KΩ, 1/2 W
R22	29501-98	Output Cathode, 300Ω, 1/2 W
R23	29502-21	Voice Coil Shunt, 3.3Ω, 1 W
R24	29501-51	Indicator Network, 390KΩ, 1/2 W
R25	29501-35	Indicator Network, 51KΩ, 1/2 W
R26	29501-35	Indicator Network, 51KΩ, 1/2wW
R27	29501-48	Tone Compensation, 240KΩ, 1/2W
R28	29501-48	Tone Compensation, 240KΩ, 1/2W
R29	29501-76	Bias Oscillator Grid, 10KΩ, 1/2W
R30	29501-19	2nd AF Amplifier Grid, 3600Ω 1/2 W (Used in Models 116, 117 only. Models 114, 115 use R15 in this application.)

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R31	29501-29	Output Grid, 22KΩ, 1/2 W (Used in Models 116, 117 only)	L1	811A-1	Filter Choke
			L2	242-14603-1	Bias Oscillator Coil
T1A	242-15736	Power Transformer (Used in Models 114 and 116 only)	M1		Fuse, 2 Amp., 250 V, Type 3AG
			M2		Neon Lamp, Type NE-51
T1B	242-15004	Power Transformer (Used in Models 115 and 117 only)	M3		Speaker Switch
			M4	242-14555-3	Selector Switch Assembly (Used in Models 114, 115 only)
T2	242-14230	Output Transformer			
SP1A	241-15734	Speaker (Models 114 and 116 only)		242-14555-4	Selector Switch Assembly (Used in Models 116, 117 only)
SP1B	241-14070	Speaker (Models 115 and 117 only)			

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	29528-5	Cover Screw, 4-40 x 3/8" Phillips Hd.	29	241-16361	Remote Lever Return Spring
			30	242-14153	Control Cam and Shaft Assembly
2	241-14062-5	Record Head Cover, Left	31	242-14073	Record Lock Arm Assembly
3	242-14142-2	Supply Shaft and Disc Assembly	32	242-14762	Record Lock Arm Spring Assembly
3A	241-16362	Thrust Washer			
4		Rewind Tape Roller	33	242-14124	Flywheel Assembly, Model 114
5		Rewind Tape Roller Bushing		242-14124-2	Flywheel Assembly, Model 115
6	241-1406-6	Record Head Cover, Right		242-14124-1	Flywheel Assembly, Model 116
7	242-14145-1	Take-up Shaft and Disc Assembly		242-14124-3	Flywheel Assembly, Model 117
8	241-14072-2	Control Handle	34	241-14152	Supply Pulley
	241-15116	Control Handle Set Screw, Cone Point Socket Head, 8-32 x 1/4" Special	35	241-16336	Rewind Drive Belt
			36	242-16309	Support Bracket Assembly
			37	241-15311	Motor Return Spring
9	241-14205	Tape Guide Top	38	242-16240	Bracket and Strap Assembly
10	241-16331	Guide Roller	39	242-14136-3	Motor Mounting Bracket and Spring Assembly
11	242-14090-1	Pinch Roller Lever and Shaft Assembly	40	241-13665-1	Motor Shock Mount
12	242-14155	Pinch Roller Assembly	41	241-14116	Fast Forward Pulley Spring
13	242-14159	Record Head and Can Assembly	42	242-16332	Fast Forward Pulley Assembly
14	242-15154	Pressure Pad Lever Assembly	43	242-16321	Fast Forward Plate and Pulley Assembly
15	29651-1	Pressure Pad Retaining Ring			
16	241-14219	Pressure Pad Spring	44	241-16335	Fast Forward Belt
17	241-14116	Bell Crank Spring	45	241-14131	Fast Forward Mechanism Spring
18	241-15310	Pinch Roller Spring	46	241-16338	Fast Forward Brake Spring
19	242-16325	Remote Lever Assembly	47	241-14130	Trip Mechanism Spring
20	242-14148	Take-up Pulley and Disc Assembly	48	241-14139	Motor Rock Spring
			49	242-16241	Bracket and Strap Assembly
21	241-14129-3	Take-up Drive Belt	50	241-14080-1	Motor Mounting Plate
22	242-14095	Brake Yoke Assembly	51	241-14135-4	Motor Pulley, Model 114
23	241-14099	Brake Lever Spring		241-14135-5	Motor Pulley, Model 115
24		Brake Lever		241-14772-2	Motor Pulley, Model 116
25		Lift Lever Adjusting Screw		241-15032-2	Motor Pulley, Model 117
26	241-15210	Lift Lever Spring	52	241-15306	Motor
27	242-16324	Mounting Plate Assembly	53	241-15309	Motor Fan
28	241-12035	Lift Lever Adjusting Lock Nut	54	242-16320	Top Plate Assembly

GENERAL ELECTRIC
MODEL 412

VOLUME CONTROL
ON-OFF SWITCH

TUNING CONTROL

GENERAL ELECTRIC
MODEL 412

TRADE NAME	General Electric Model 412
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N.Y.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .22 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (grid) of 12BA6 (V2) Low side to B-.	455 KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	"	"	"	A3, A4	"
3.		Loop	1620 KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1500 KC	Tune to 1500 KC signal	"	A6	Adjust for maximum output. Set dial pointer to 150.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		G.E. PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	G.E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	RCE-127	PRS150/50-50		BRD5515A		2N521	TVA-2453	
B	50	150								
C2	.05	400	UCC-045	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C3	47		UCU-020	SI47N750	TCN-47			NT-5447	5TCU-Q47	
C4A	400		RCW-3048	SI400	D6-401	5W5T4	GP2K-401	UC-534	34C3	
B	2000			BPD-002	DD-202	TM5D2	801-002	DC-522		
C	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
D	5000			BPD-005	DD-502	TM5D5	811-005	DC-525		
C5	.02	600	UCC-041	P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C6	.05	600	UCC-045	P688-05		PTE6S5		PT615	6TM-S5	
C7	.05	400	UCC-045	P488-05		PTE4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	G.E. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	RRC-106	Q13-133	AG-60-Z	AB-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	KB-1	US-26	Attach to R1A

RESISTORS

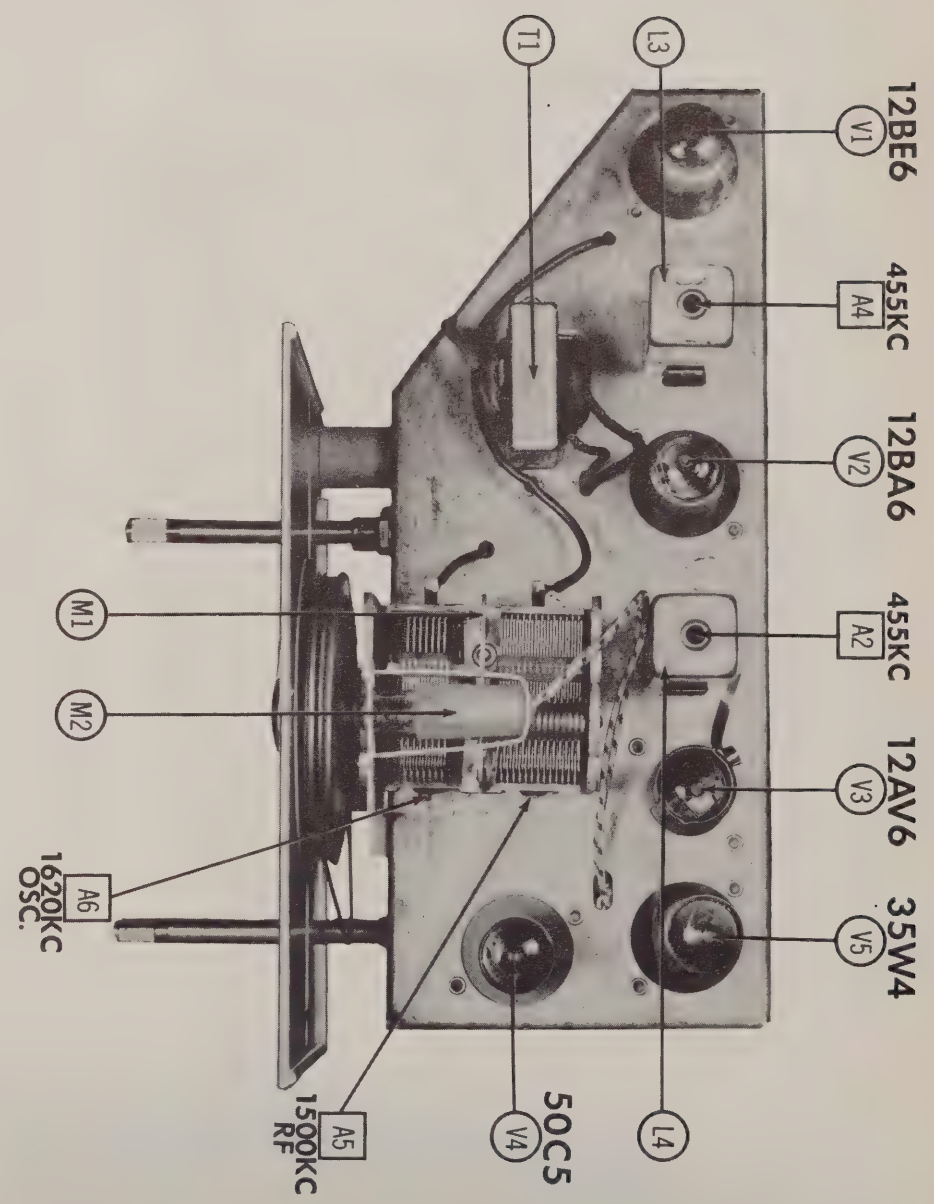
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	G.E. PART No.	IRC PART No.	
R2	22KΩ	½	URD-081	BTS-22K	
R3	68Ω	½	URD-021		
R4	2.2Meg	½	URD-129	BTS-2.2Meg	
R5	4.7Meg	½	URD-137	BTS-4.7Meg	
R6	470KΩ	½	URD-113	BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PART No.	IRC PART No.	
R7	1 Meg	½	URD-121	BTS-1 Meg	
R8	150Ω	½	URD-029	BTS-150	
R9	1500Ω	2	URF-053	BTB-1500	
R10	18Ω	½	URD-007		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		G.E. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.6KΩ	3.5Ω	220Ω	.5Ω	RTO-069	A-3332	A-3025	RO-2 ①	S-1X	① Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	G.E. PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.5Ω	S403D7	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	G. E. PART No.	MERIT PART No.	IRC PART No.	
L1	Loop Ant.	3.2Ω		RAB-095			Includes back cover.
L2	Osc. Coil	.6Ω	7Ω	RLC-117	BC-381 *		
L3	Input IF	13.5Ω	13.5Ω	RTL-135	BC-352		
L4	Output IF	13.5Ω	13.5Ω	RTL-135	BC-353		

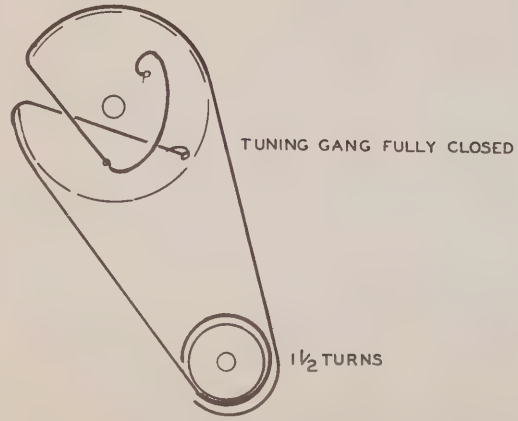
* Requires new mounting

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					G. E. PART No.		
M1	Bayonet	6-8	.15	Brown			Type #47

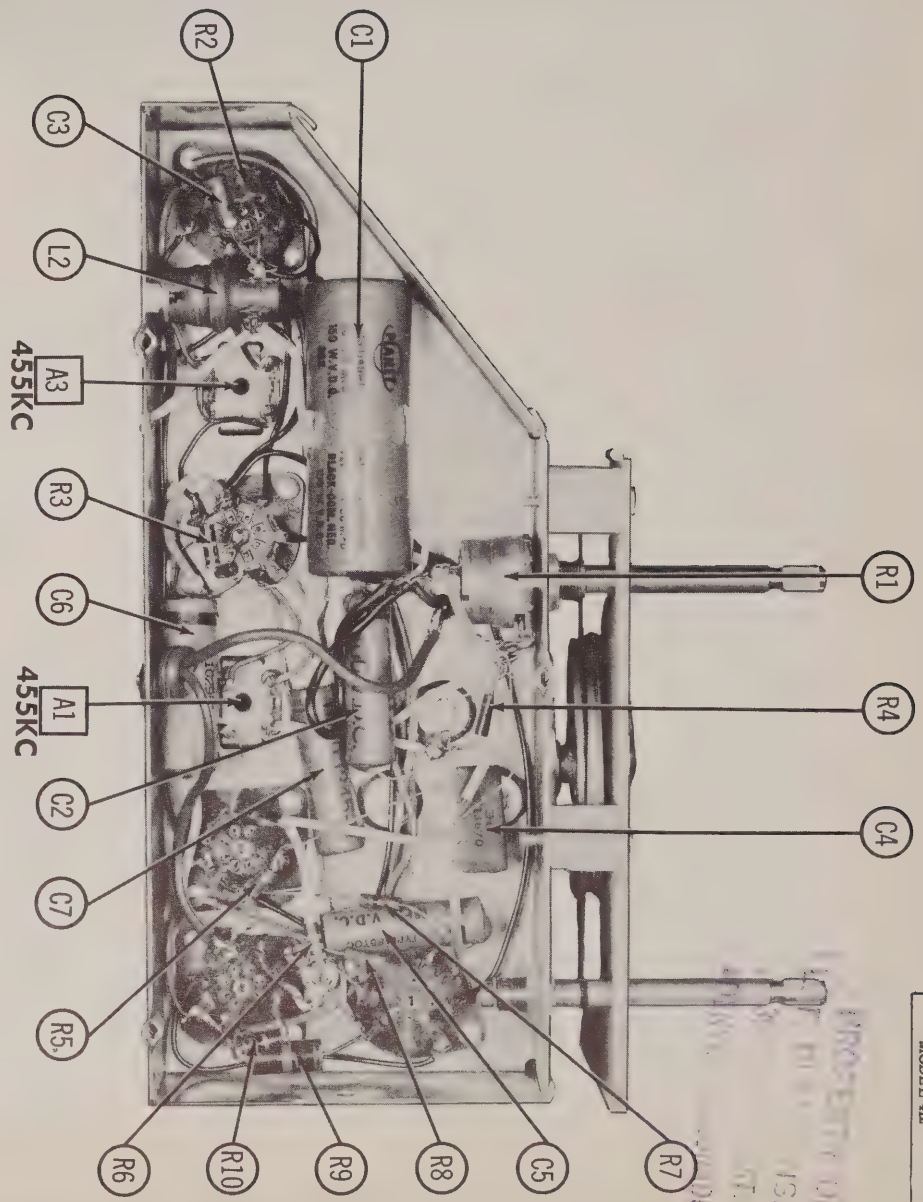
MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M2	Tuning Capacitor	RCT-037	18-430MMF, 22-145MMF
	Cabinet	RAU-363	Black, Plastic
	Dial Window	RDW-021	
	Knob	RDK-174	2 Used
	Dial Plate	RDS-118	With Scale
	Tuning Shaft	RMX-170	Bushing Assembly Included



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



PROPERTY OF
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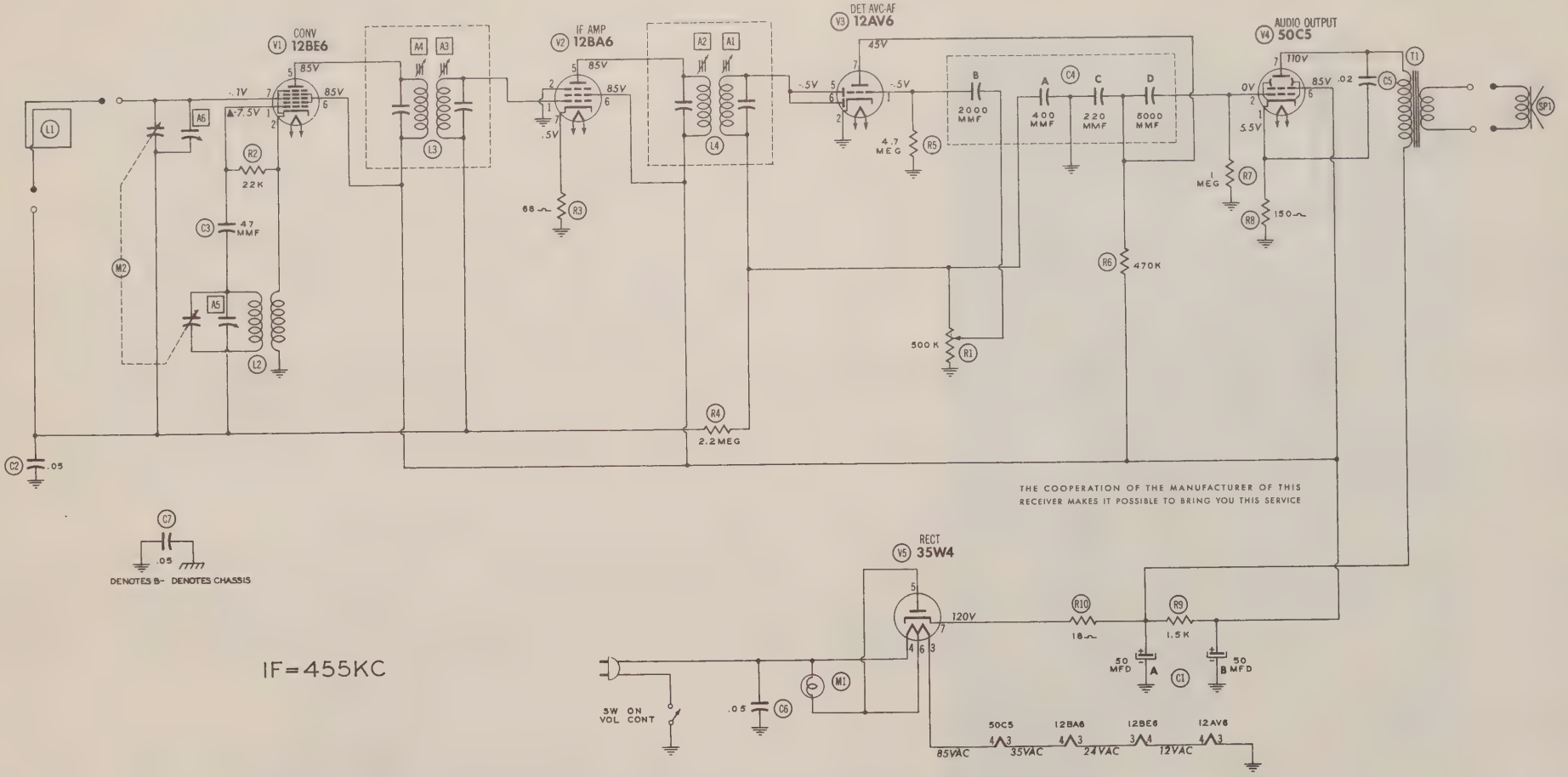
GENERAL ELECTRIC
MODEL 412

GENERAL ELECTRIC
MODEL 412



DENOTES B- DENOTES CHASSIS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF=455KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	22Ω	11Ω	†1.5KΩ	†1.5KΩ	2.7Meg
V 2	12BA6	0Ω	0Ω	22Ω	33Ω	†1.5KΩ	†1.5KΩ	68Ω
V 3	12AV6	4.7Meg	119Ω	0Ω	11Ω	500KΩ	500KΩ	†470KΩ
V 4	50C5	150Ω	1 Meg	33Ω	90Ω	INF	†1.5KΩ	†238Ω
V 5	35W4	†18Ω	18Ω	90Ω	119Ω	113.5Ω	113.5Ω	500KΩ

† MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

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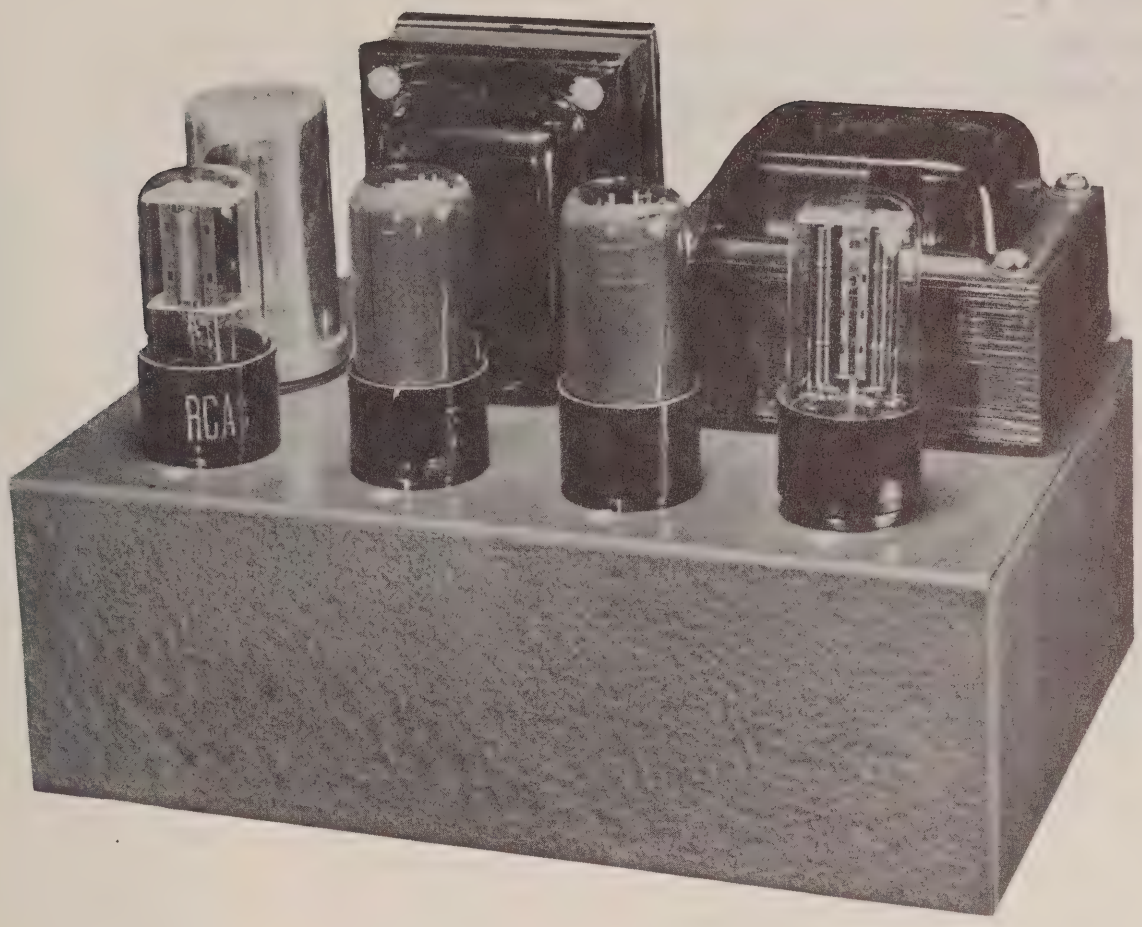
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

GROMMES MODEL 100BA

GROMMES MODEL 100BA



GROMMES MODEL 100BA

TRADE NAME	Grommes Model 100BA
MANUFACTURER	Precision Electronics, 641 Milwaukee Ave., Chicago, Ill.
TYPE SET	AC Operated Audio Amplifier
TUBES (FOUR)	Types 6SL7GT AF Amp.-Phono Inv., (2) 6V6GT Audio Output 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .57 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		GROMMES PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier-Phase Inverter	6SL7GT	6SL7GT	8BD	
V2	Audio Output	6V6GT	6V6GT	7AC	
V3	Audio Output	6V6GT	6V6GT	7AC	
V4	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	GROMMES PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	400		AFH4-78		UP43145C		FP429	TVL-4734	Note 1 Note 2
B	■30	350								
C	▲10	300								
D	20	25								
C2	100	25		PRS25/100		BRH25IA		TC2501	TVA-1207	
C3	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C4	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	

Note 1. Some Models use 10MFD in this application.
Note 2. Some Models use 30MFD in this application.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	GROMMES PART No.	IRC PART No.	
R1	470KΩ	½		BTS-470K	
R2	100Ω	½		BTS-100	
R3	100KΩ	1		BTA-100K	
R4	100KΩ	1		BTA-100K	
R5	47KΩ	½		BTS-47K	
R6	220KΩ	½		BTS-220K	

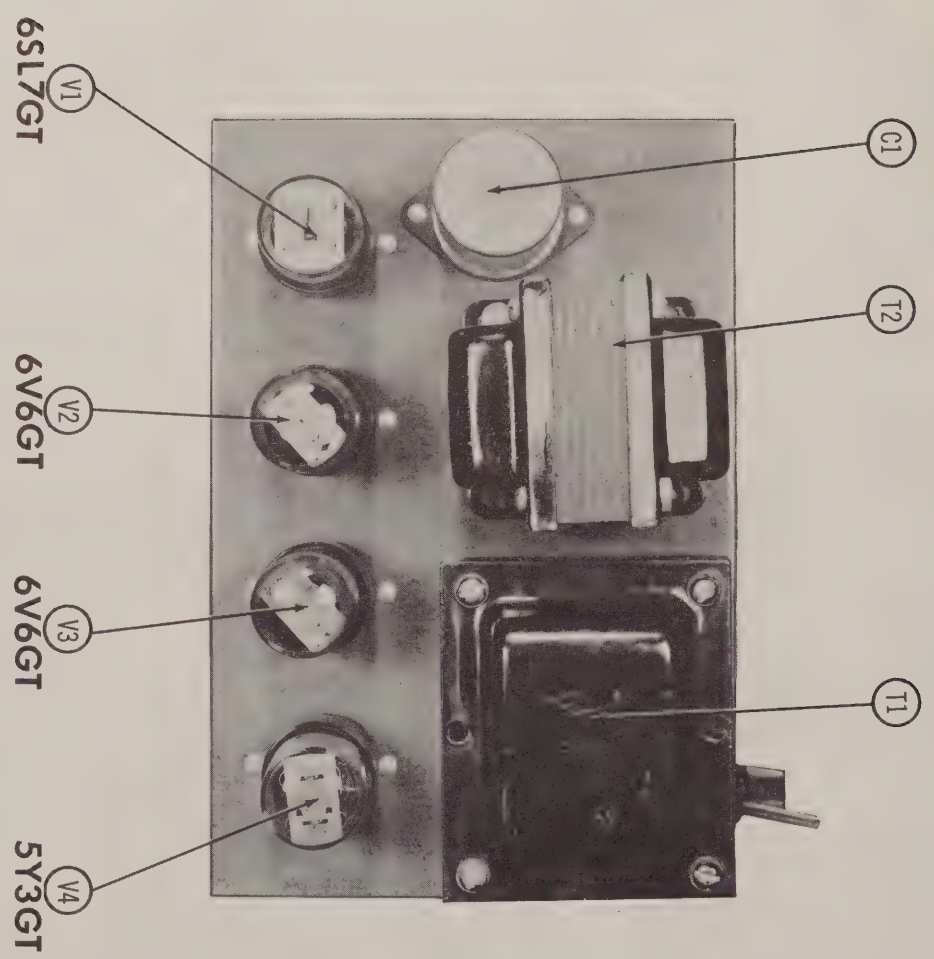
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PART No.	IRC PART No.	
R7	300Ω	5		1 3/4A-300	
R8	270KΩ	½		BTS-270K	
R9	1000Ω	½		BTS-1000	
R10	2700Ω	1		BTA-2700	
R11	2700Ω	½		BTS-2700	
R12	5600Ω	2		BTB-5600	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	GROMMES PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC ⓐ .57A	670VCT .075ADC	5VAC ⓐ 2A	6.3VCT ⓐ 1.4A		PM-8409 ①	P-2953	PH-90 ①	R-11B ①

① Drill new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

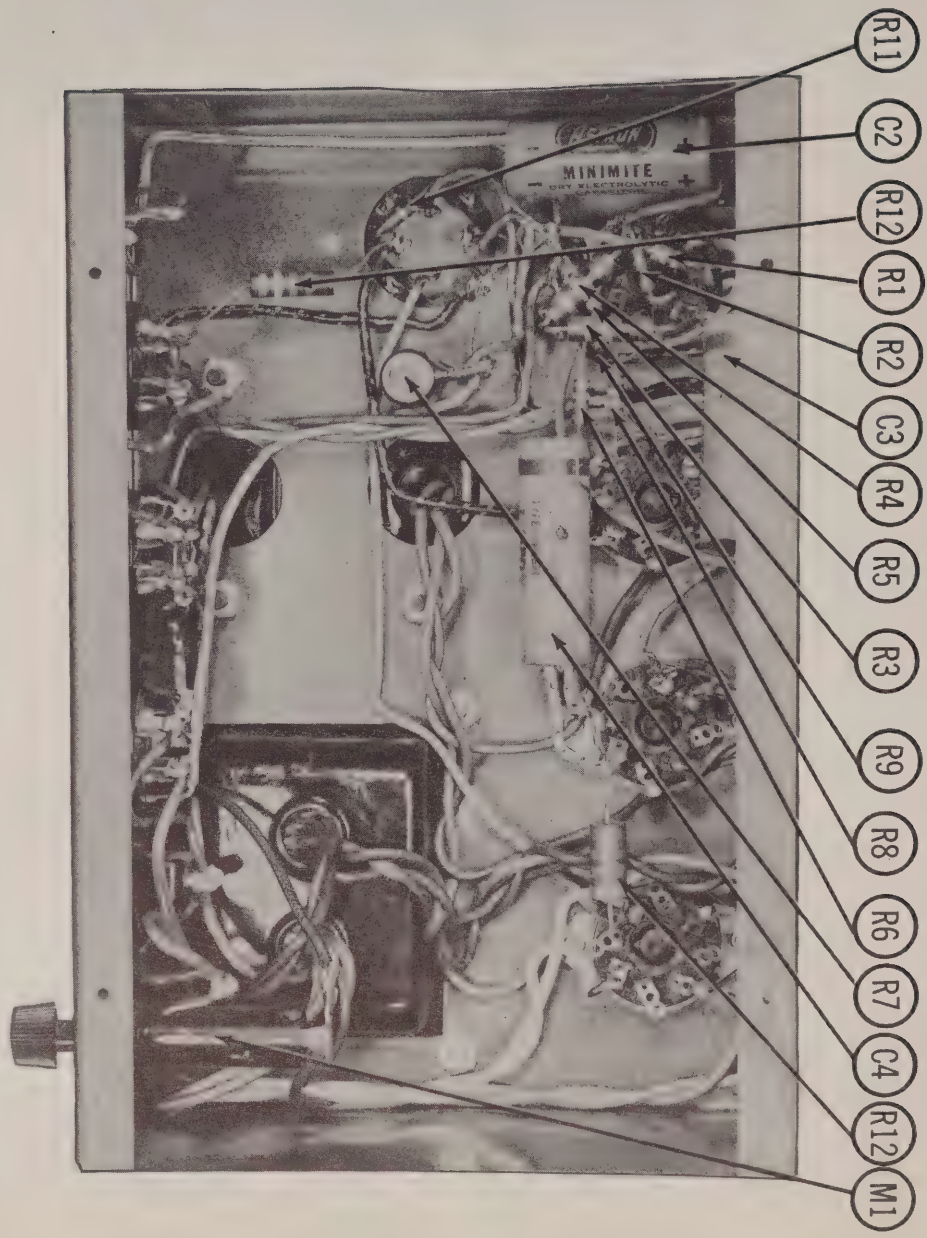
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		GROMMES PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	9.6KΩ CT	16Ω tap ⓐ 8Ω, 4Ω	268Ω CT	.61Ω tap ⓐ .45Ω, .35Ω		A-3304 ①		RO-110	HSM-81 ①	① Drill new mtg. holes.

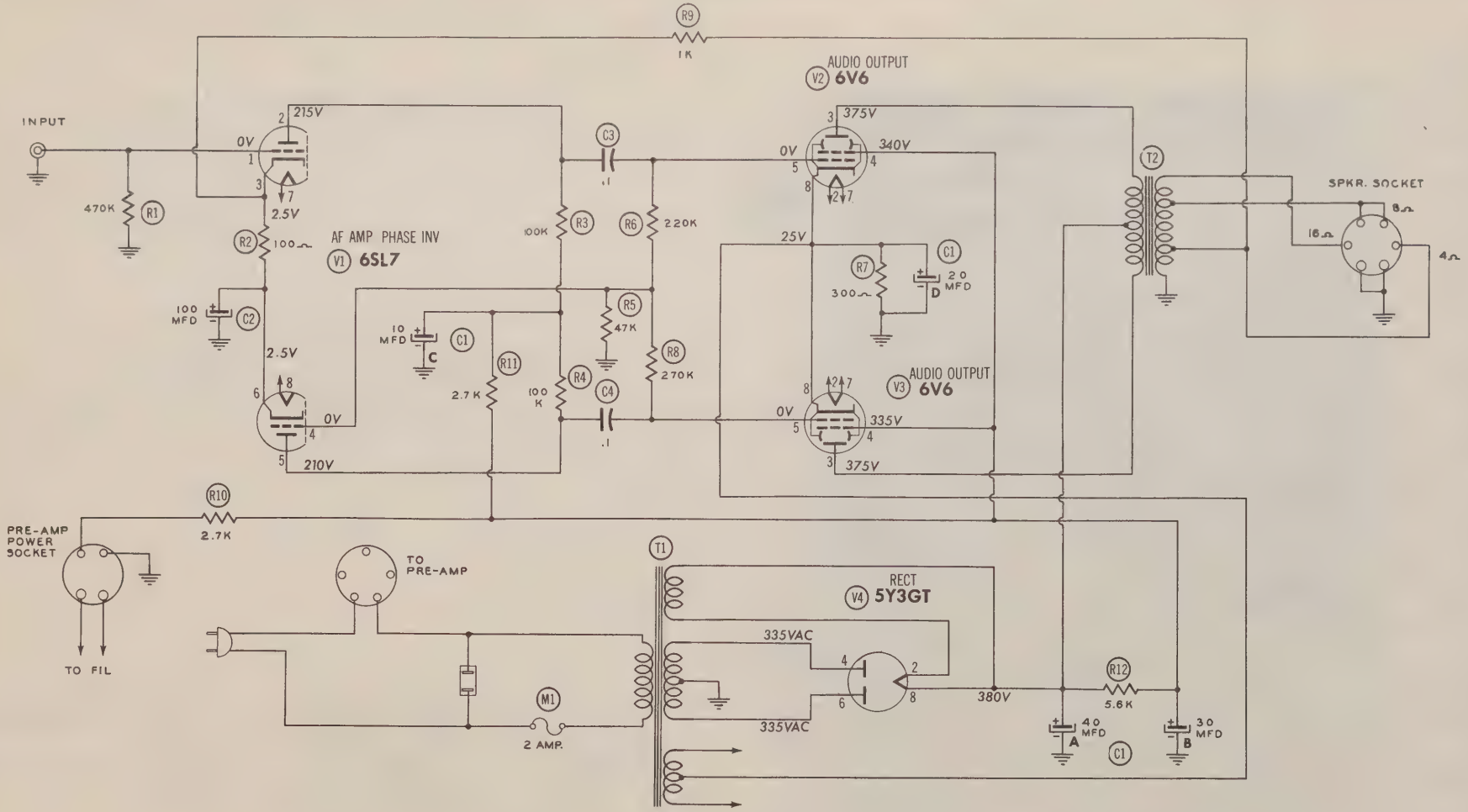
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			GROMMES PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	AGC	2A 250V			312002	342001	AGC-2	HKP

CHASSIS—BOTTOM VIEW



GROMMES MODEL 100BA



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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SL7GT	470KΩ	†108KΩ	1KΩ	47KΩ	†108KΩ	1.1KΩ	300Ω	300Ω
V 2	6V6GT	0Ω	300Ω	†119Ω	†5.6KΩ	267KΩ	315KΩ	300Ω	300Ω
V 3	6V6GT	INF	300Ω	†149Ω	†5.6KΩ	315KΩ	INF	300Ω	300Ω
V 4	5Y3GT	INF	350KΩ	INF	118Ω	INF	109Ω	INF	350KΩ

† MEASURED FROM PIN 2 OF V4

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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189-10

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

PROPERTY OF
L. F. BLANKENSHIP
COLORADO

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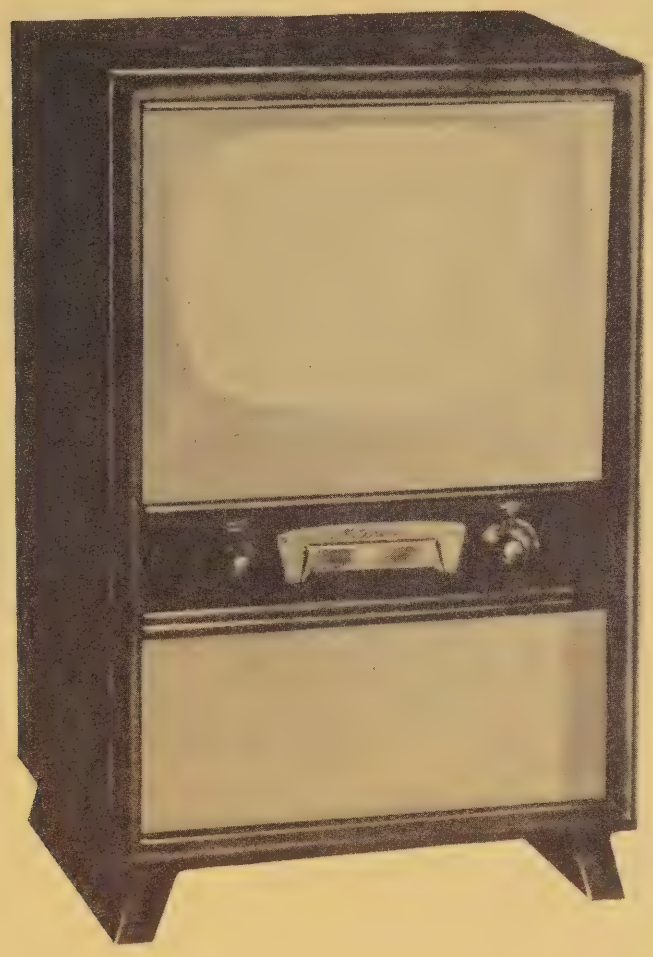

MODEL T172-M

MITCHELL
MODELS T172-B, -M

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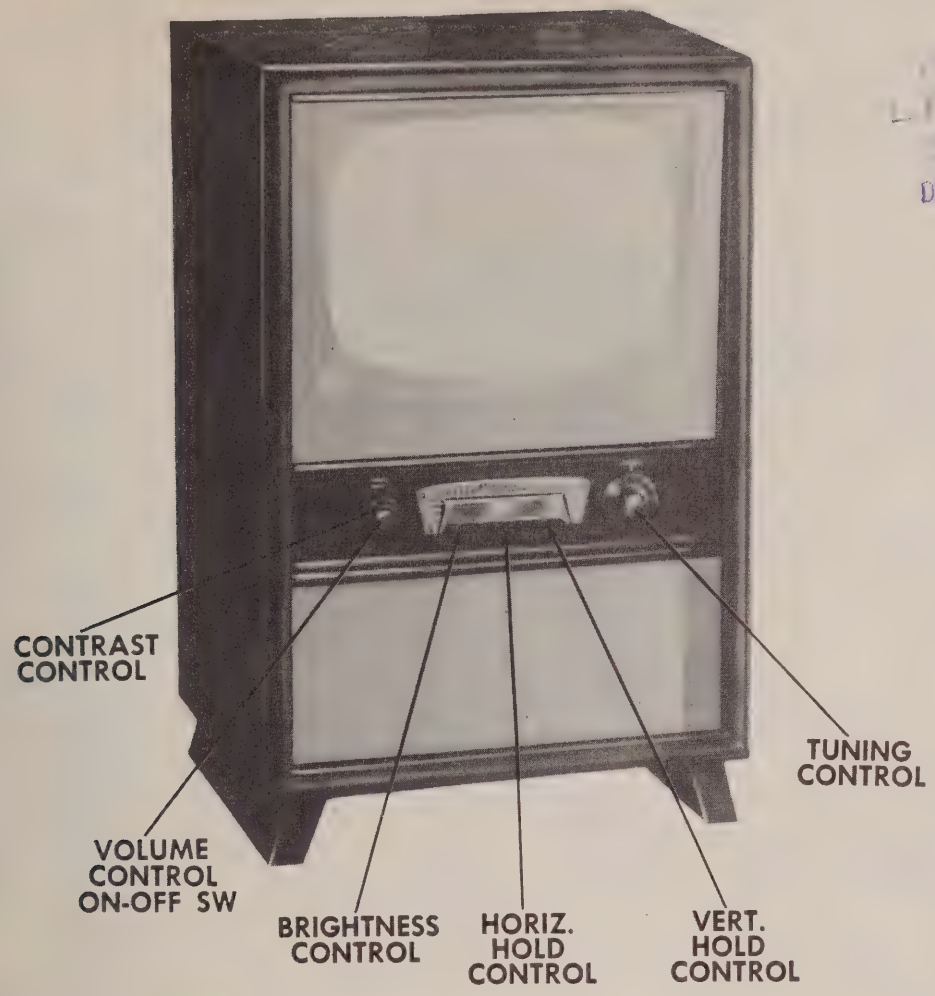

DENVER, COLORADO

MITCHELL
MODELS T172-B, -M

MITCHELL T172-M

TRADE NAME	Mitchell Models T172B, T172M
MANUFACTURER	Mitchell Manufacturing Co., 2525 Clybourn Avenue, Chicago 14, Ill.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.8 Amp @ 117 Volts AC
TUNING RANGE	2 thru 13 (Continuous tuning)

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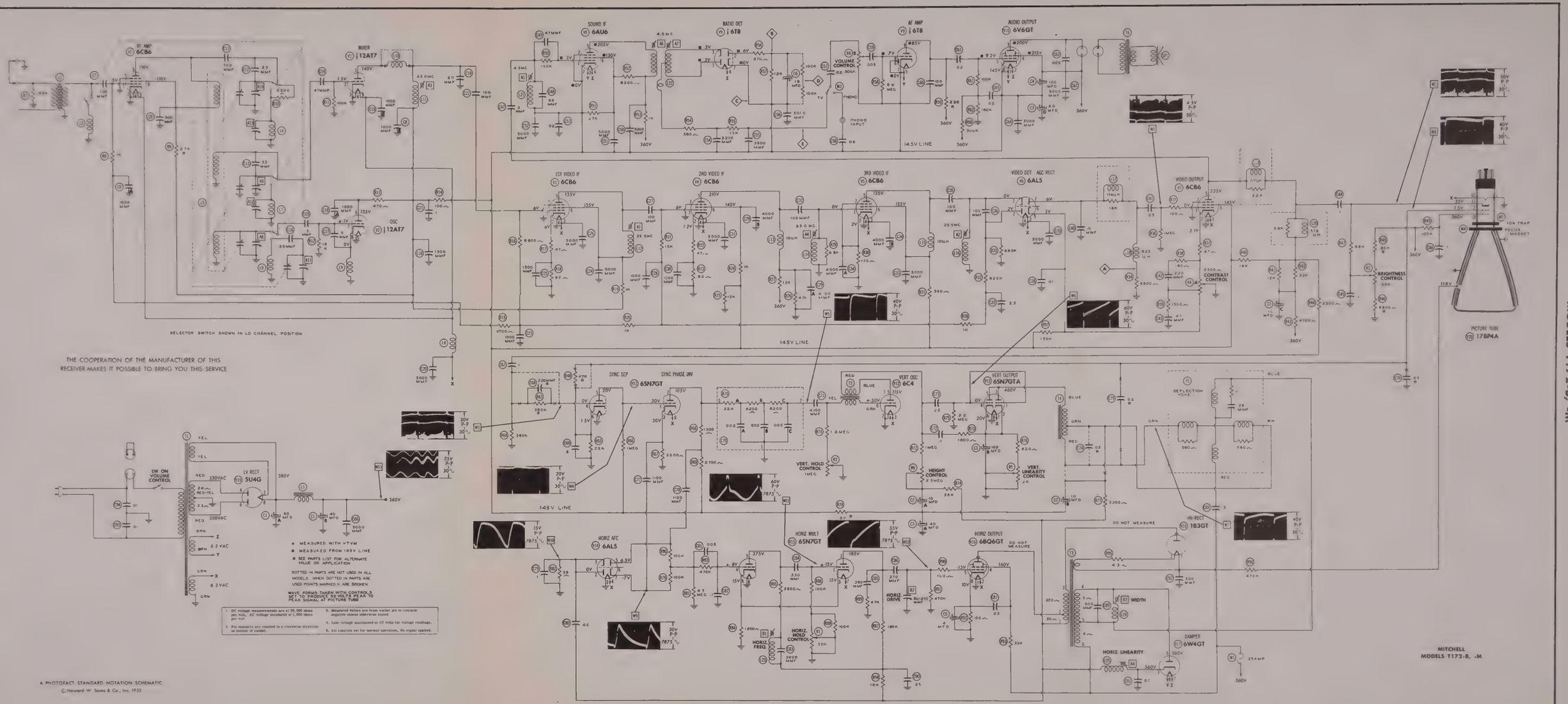
MITCHELL
MODELS T172-B, -M
SELECTOR SWITCH SHOWN IN LO CHANNEL POSITION
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1952
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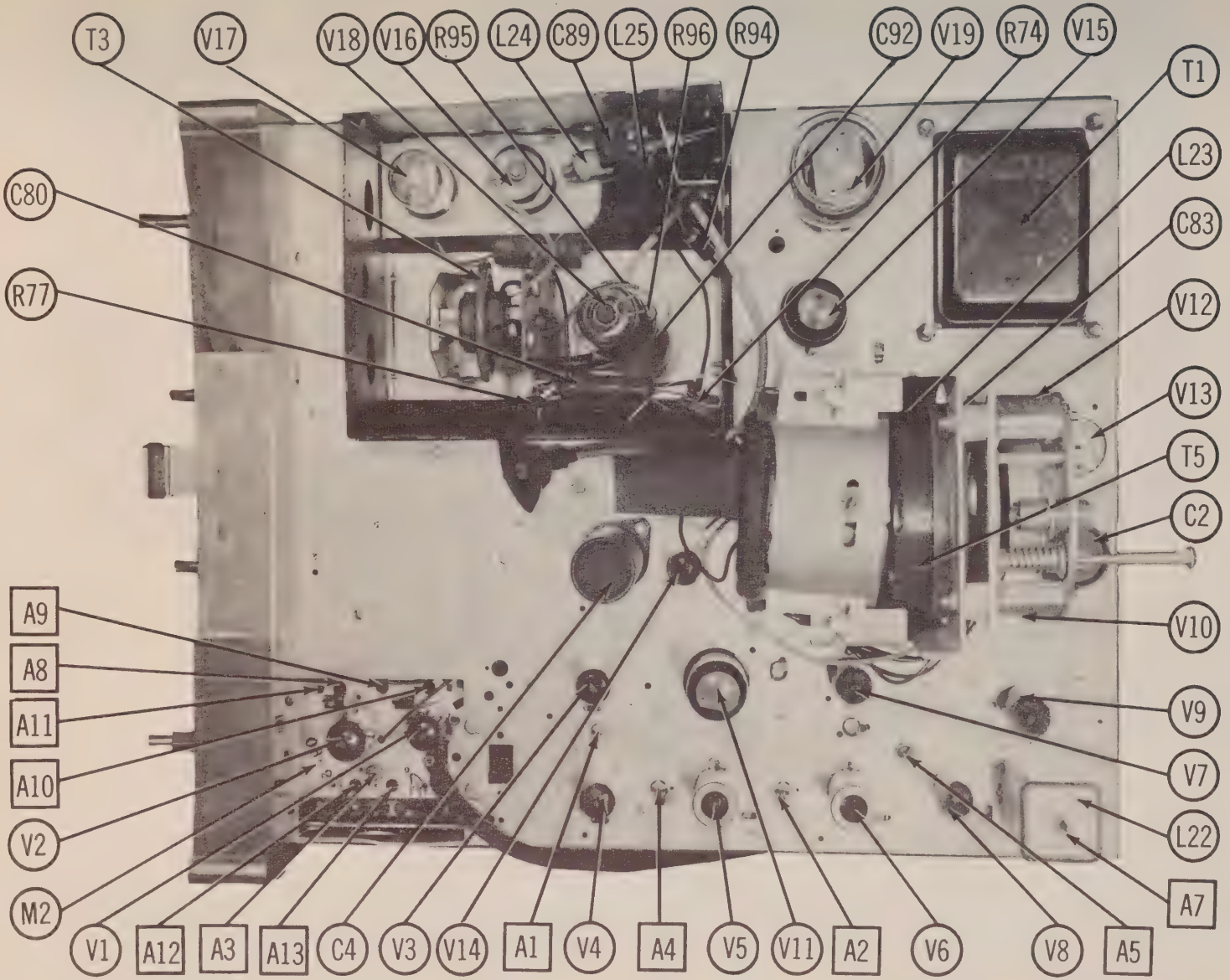
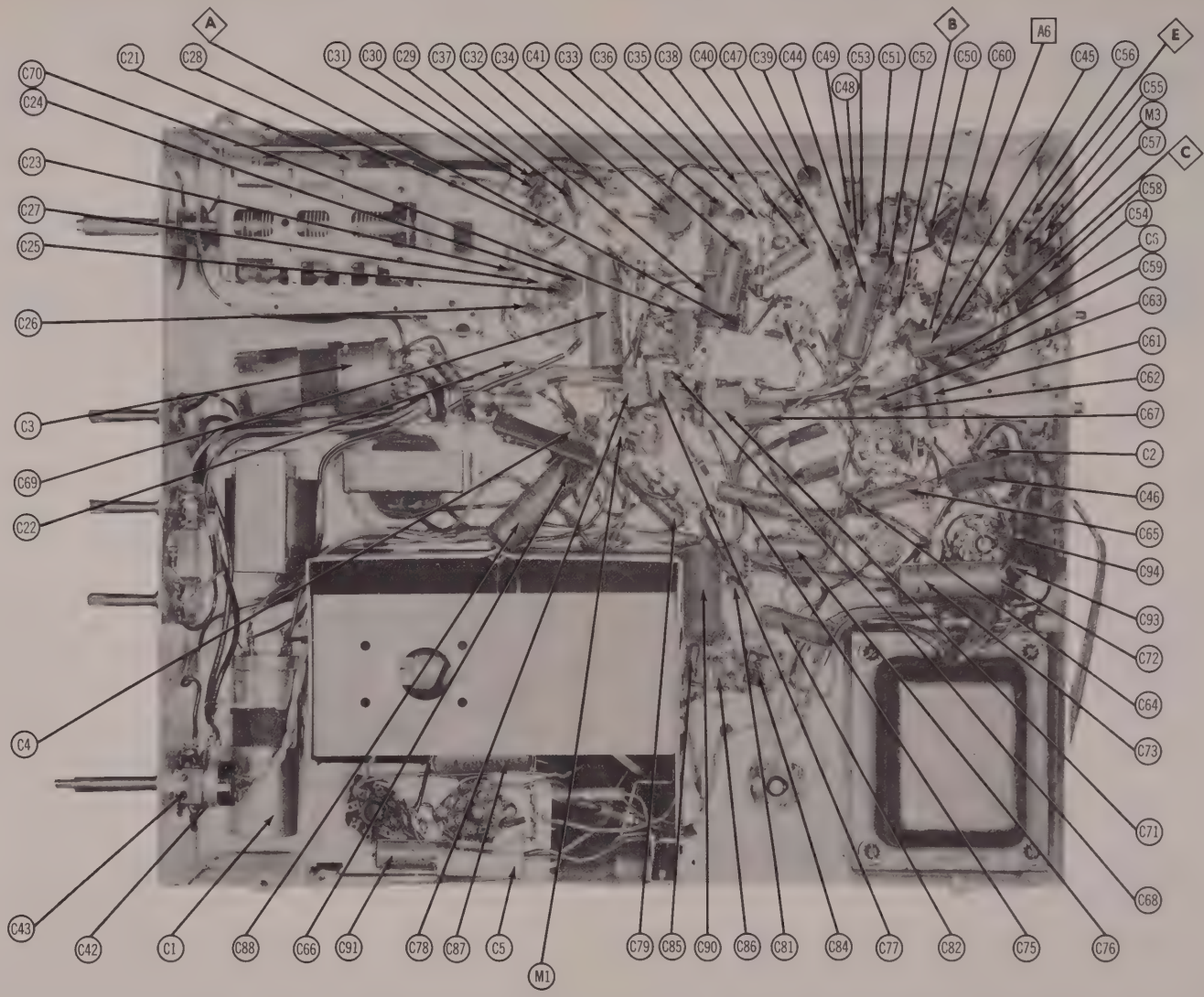
MODELS T172-B, -M



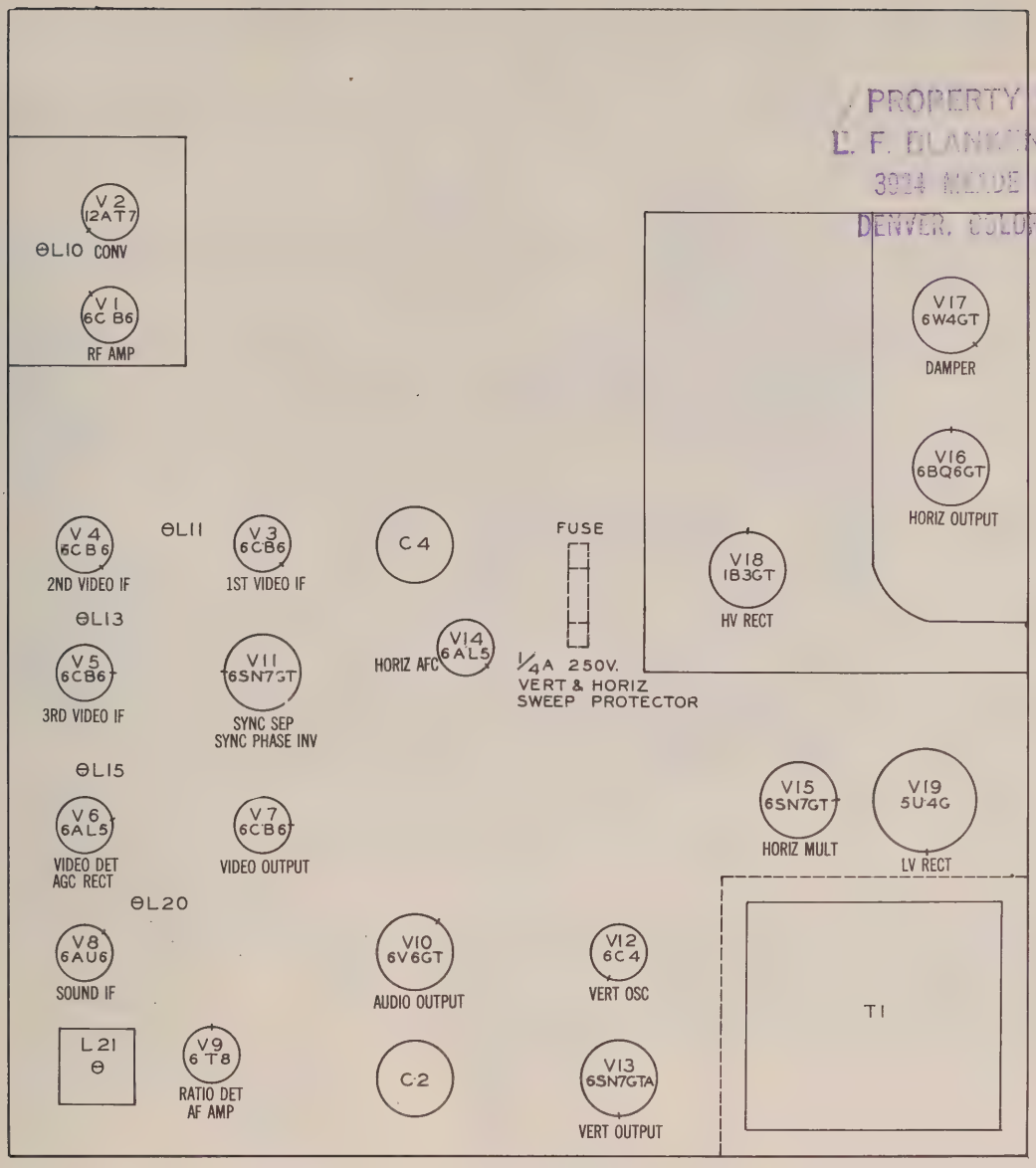
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

. PROPE
L. F. BL
3924 MEADE
DENVER, COLORA

TUBE PLACEMENT CHART



TOP VIEW

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DENVER, COLORADO

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V19

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6, V7, V10
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V7, V20
Has pic, no sound-V8, V9, V10
Overloaded picture-V6

SYNC FAILURE
No vert. sync.-V11, V12
No horiz. sync.-V11, V14, V15
No vert. or horiz. sync.-V11

SWEEP FAILURE
No raster, has sound-V15, V16, V17, V18, V20, Fuse (M1)
No vertical deflection-V13
Poor vert. linearity or foldover-V12, V13
Poor horiz. linearity or foldover-V15, V16, V17
Narrow picture-V15, V16, V17, V18, V19
Vert off freq.-V12
Horiz. off freq.-V11, V14, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube, V15, from its socket.

VIDEO IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube, V2. Low side to chassis.	25.5MC (Unmod)	Tune to point of non-interference.	DC probe to point (A) Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate generator to minimum usable output.
2.	"	"	23.0MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal imput of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over converter tube V2. Low side to chassis.	24MC (10MC Swp)	22.8MC 26.1MC	Tune to point of non-interference.	Vert amp to point (A) Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 and A2 for correct marker placement at 26.1MC and adjust A3 and A4 for correct marker placement at 22.8MC.

SOUND ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ resistors in series from point B to point C. The junction of the two resistors is alignment point (D).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis.	4.5MC (Un mod)	Point of non-interference.	DC probe to point (B) Common to point (C) (Caution-These are approximately 145V above chassis. Avoid touching or shorting VTVM case).	A5, A6	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to point (E) Common to point (D)	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5 MC	Point of non-interference.	Vert amp to point (B) Low side to chassis.	A5, A6	Disconnect stabilizer capacitor, C6. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
5.	"	"	"	"	"	Vert amp to point (E) Low side to chassis.	A7	Reconnect capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in fig 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC Swp)	83.25MC	6	Vert. Amp. to point (A). Low side to chassis.	A8	Adjust so that the video marker occurs at 60% on video side of the response curve as in fig. 4. As A8 is turned clockwise video marker should move up on response curve. If not it is on audio side of curve and A8 must be turned counter clockwise for correct marker placement.
7.	"	"	"	83.25MC 87.75MC	"	"	A9, A10	Adjust for maximum amplitude of response curve without decrease of bandwidth.
8.	"	"	57MC (10MC Swp)	55.25MC 59.75MC	2	"		Check for correct marker placement as in fig. 4.
9.	"	"	213MC (10MC Swp)	211.25MC	13	"	A11	Adjust so that video marker occurs at 60% on video side of response curve as in fig. 4.
10.	"	"	"	211.25MC 215.75MC	"	"	A12, A13	Adjust for maximum amplitude of response curve without decrease of bandwidth.
11.	"	"	177 MC (10MC Swp)	175.25MC 179.75MC	7	"		Check for correct marker placement as in fig. 4.

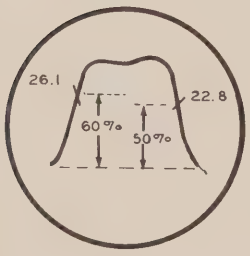


FIG. 1

FIG. 2

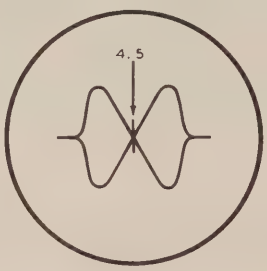


FIG. 3

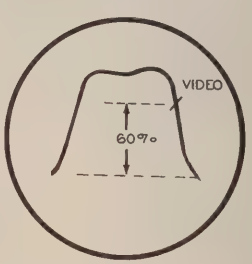
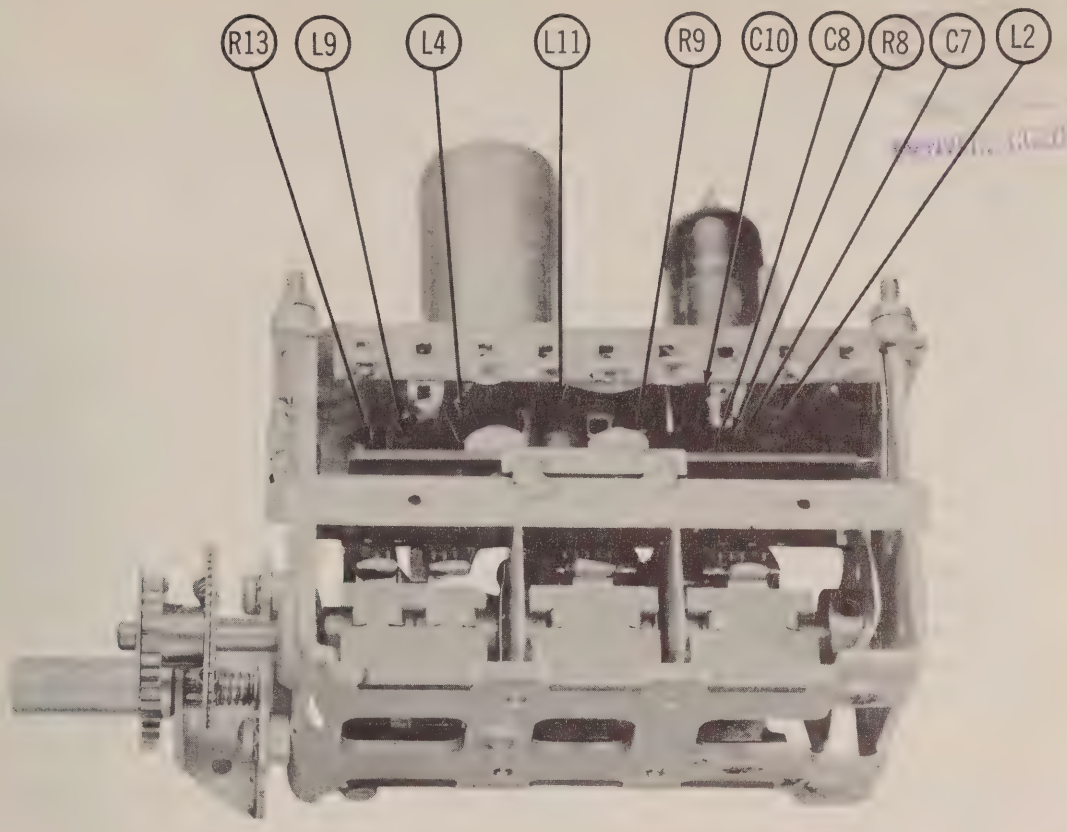
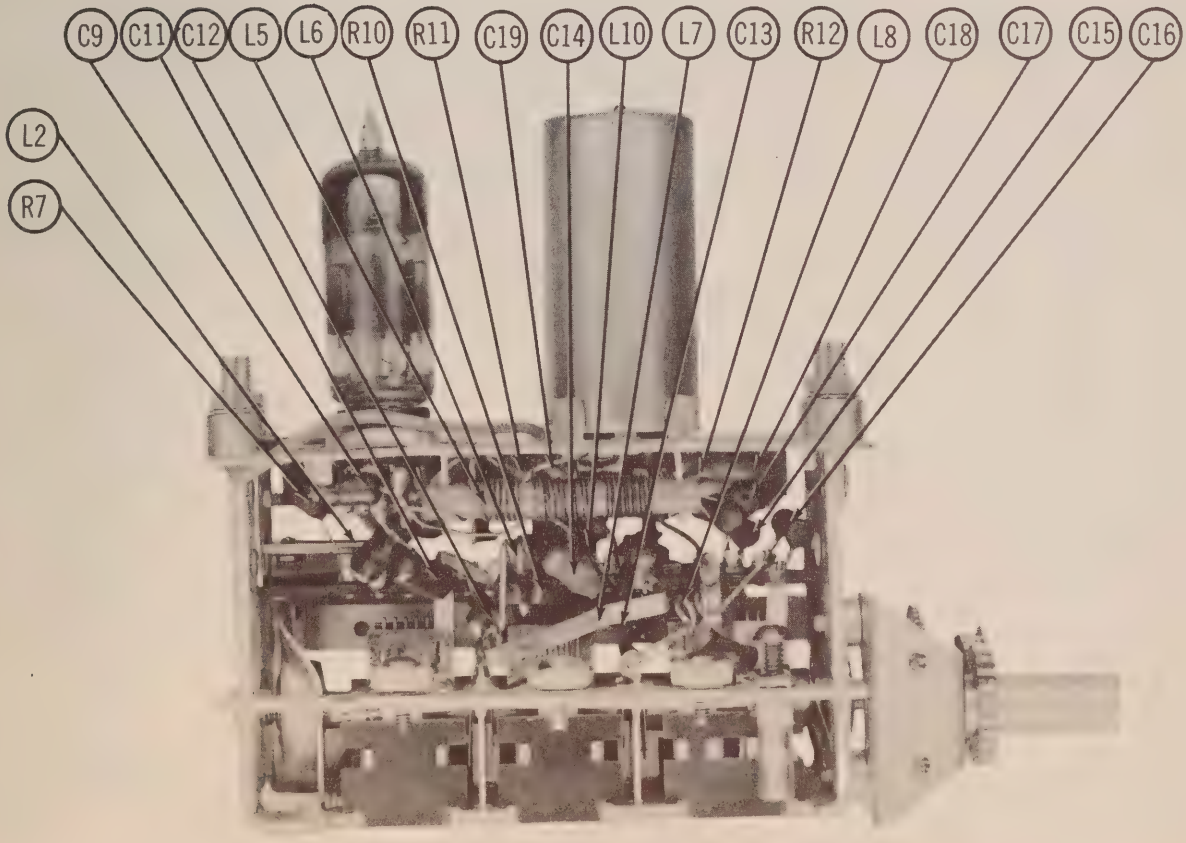


FIG. 4



RF TUNER-RIGHT SIDE

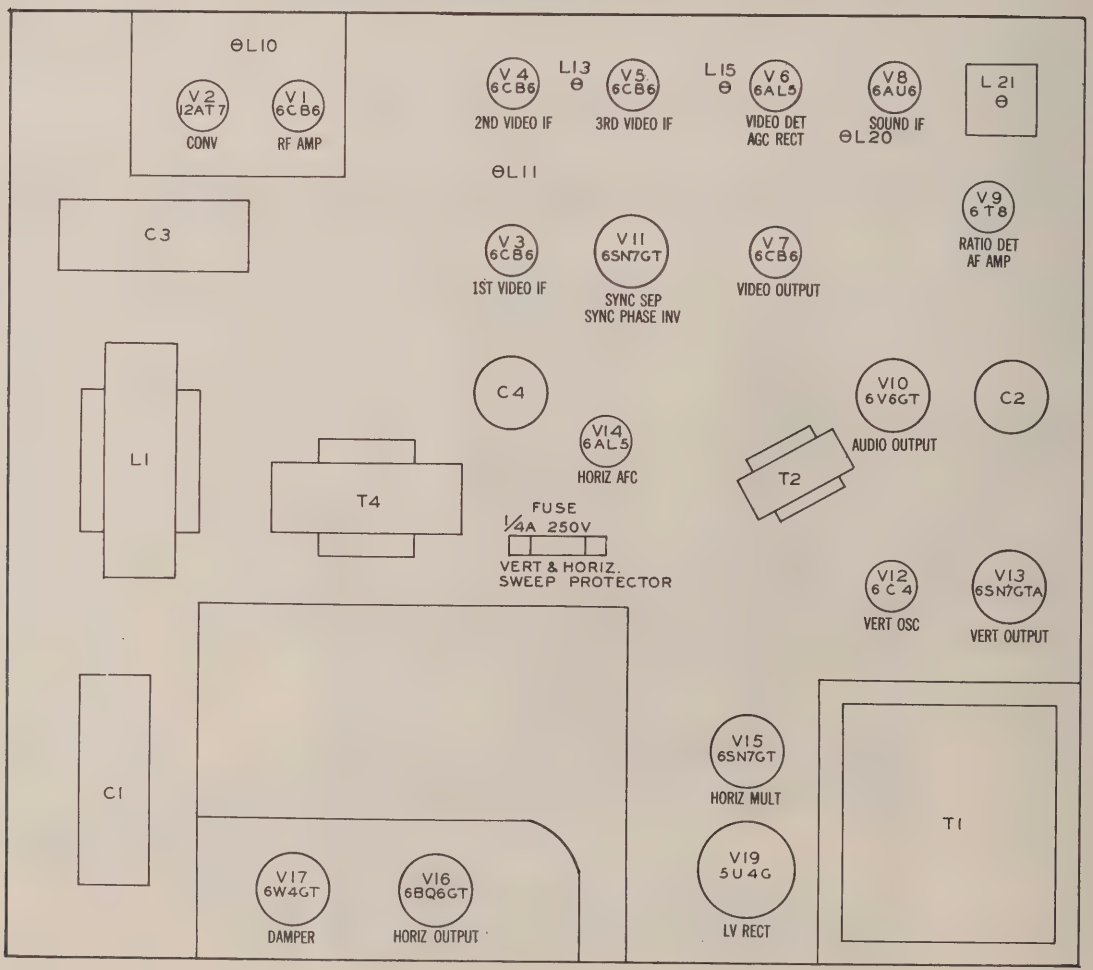


RF TUNER-LEFT SIDE

RESISTANCE MEASUREMENTS

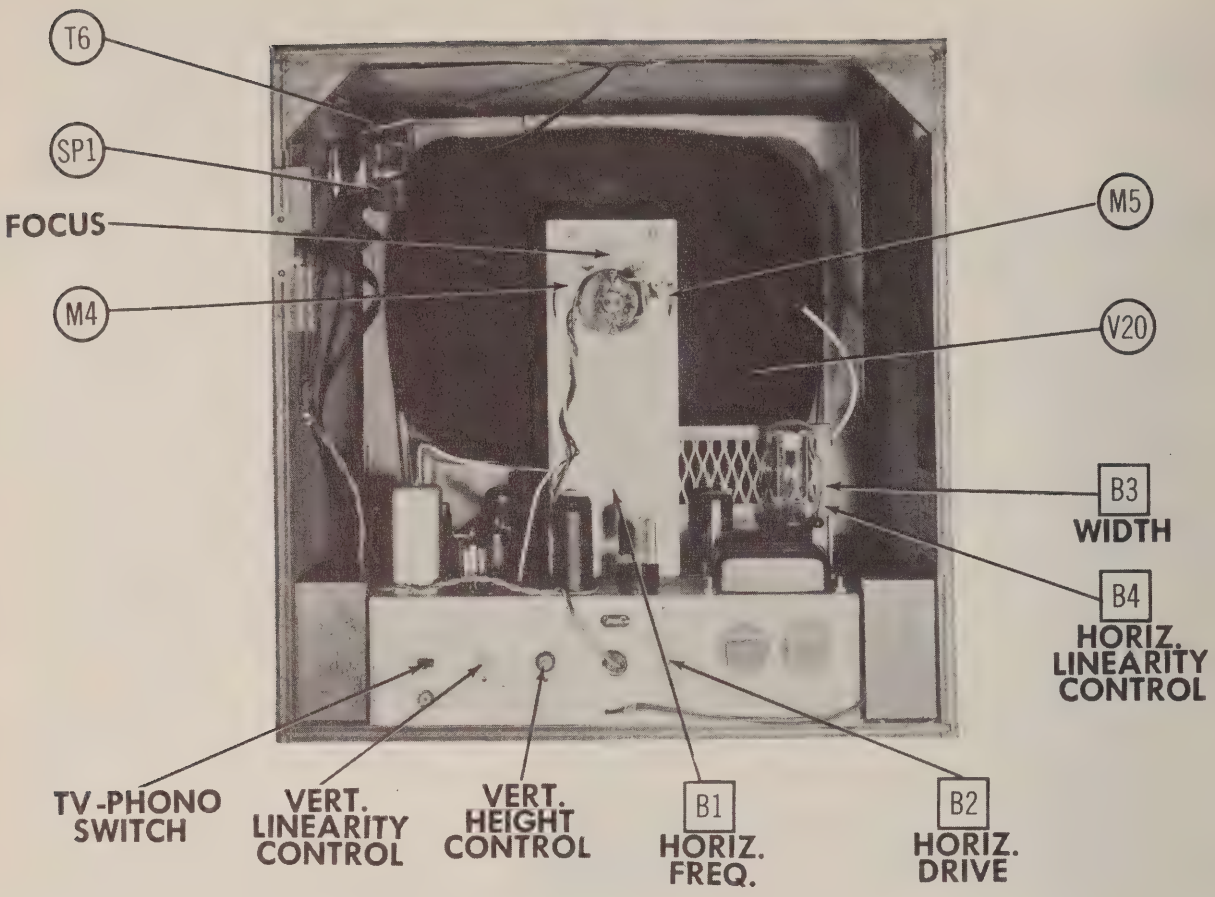
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1.5Meg	0Ω	.2Ω	0Ω	■2.8KΩ	■2.8KΩ	0Ω		
V 2	12AT7	■100Ω	100KΩ	0Ω	0Ω	0Ω	■570Ω	18KΩ	.2Ω	.2Ω
V 3	6CB6	1.5Meg	129Ω	.1Ω	0Ω	■1.1KΩ	■1.1KΩ	0Ω		
V 4	6CB6	1.5Meg	129Ω	.1Ω	0Ω	†10KΩ	■1KΩ	0Ω		
V 5	6CB6	.2Ω	150Ω	.1Ω	0Ω	■560Ω	■560Ω	150Ω		
V 6	6AL5	.2Ω	680KΩ	.1Ω	0Ω	2KΩ	INF	6.8KΩ		
V 7	6CB6	1 Meg	550Ω	.1Ω	0Ω	†10KΩ	■0Ω	0Ω		
V 8	6AU6	■150KΩ	■0Ω	■0Ω	■.1Ω	†1KΩ	†7.5KΩ	■0Ω		
V 9	6T8	INF	■12KΩ	INF	■.1Ω	■0Ω	■0Ω	■0Ω	■6.8Meg	†220KΩ
V 10	6V6GT	INF	■.1Ω	†460Ω	†65Ω	230KΩ	130KΩ	■0Ω	10KΩ	
V 11	6SN7GT	■1Meg	■4.2KΩ	2.2KΩ	1.1Meg	■1Meg	22KΩ	0Ω	.1Ω	
V 12	6C4	#2Meg	INF	.1Ω	0Ω	#2Meg	1.5Meg	0Ω		
V 13	6SN7GTA	2.2Meg	#6.6KΩ	1.5KΩ	2.2Meg	#6.6KΩ	1.5KΩ	.1Ω	0Ω	
V 14	6AL5	56Ω	56Ω	0Ω	.1Ω	4.8Meg	INF	4.8Meg		
V 15	6SN7GT	130KΩ	#190KΩ	1.2KΩ	5.1Meg	#15KΩ	1.2KΩ	.1Ω	0Ω	
V 16	6BQ6GT	INF	.1Ω	INF	†33KΩ	470KΩ	INF	0Ω	100Ω	Top Cap #55Ω
V 17	6W4GT	INF	INF	550KΩ	INF	†74Ω	INF	■.1Ω	■0Ω	
V 18	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #305Ω
V 19	5U4G	INF	16KΩ	INF	24Ω	INF	23Ω	INF	16KΩ	
V 20	17BP4A	0Ω	69KΩ	Pin 10 †100KΩ	Pin 11 100KΩ	Pin 12 .1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V19
# MEASURED FROM PIN 3 OF V17
■ MEASURED FROM 145VDC LINE



BOTTOM VIEW

TUBE PLACEMENT CHART



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. The sync range of the horizontal hold control should be equally spaced on each side of the center position.

Adjust the horizontal drive trimmer (B2) in a maximum counter clockwise direction without the presence of vertical white lines in the picture.

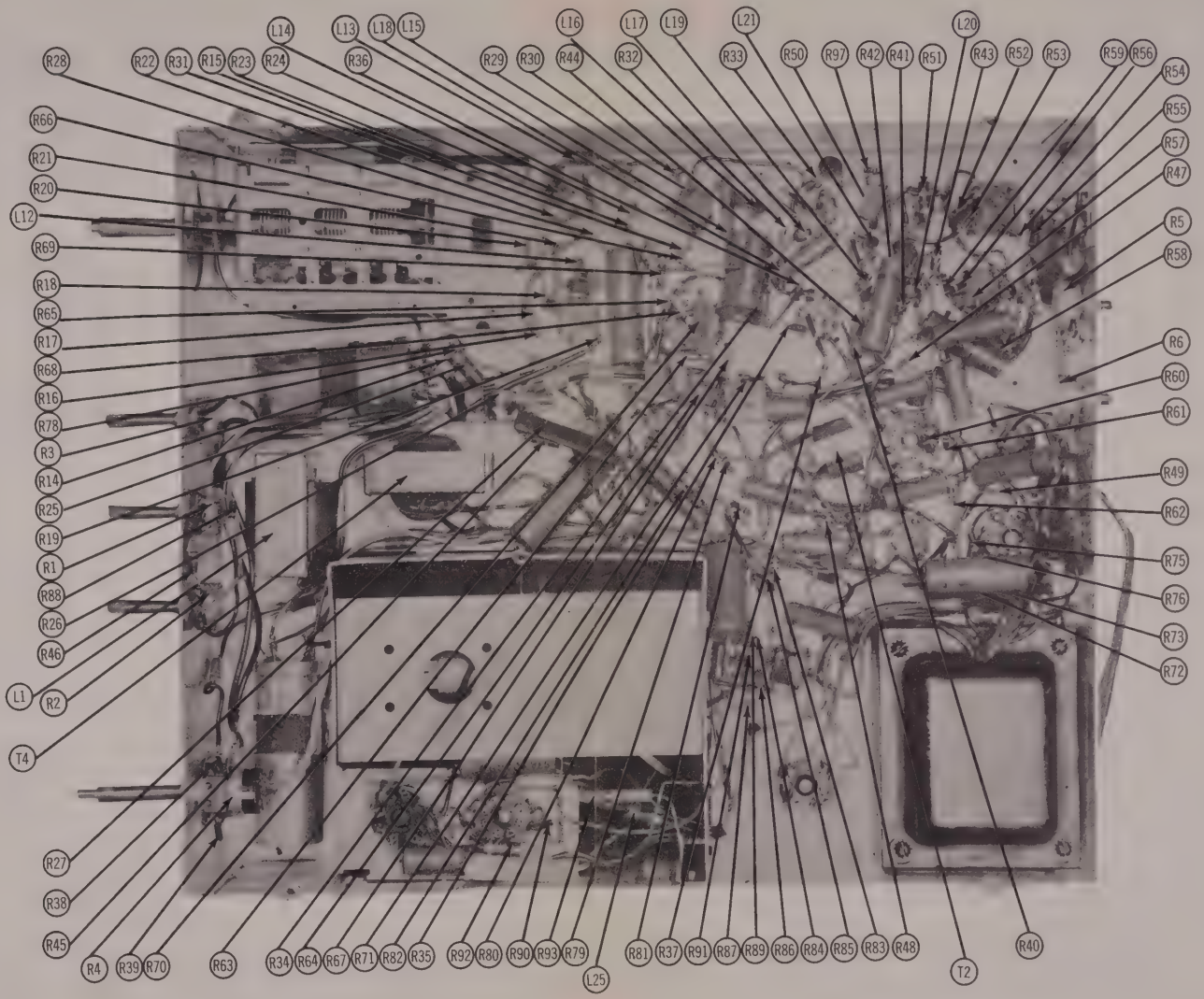
Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 7 wood screws. Remove rear cover.
3. Disconnect builtin antenna & speaker.
4. Remove 2 wood screws. Remove antenna bracket.
5. Remove 5 chassis. bolts. Remove chassis.
6. Remove 2 wood screws holding speaker . Remove speaker.

NOTE:
FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: MITCHELL PART No	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6CB6	6CB6	7CM	
V2	Converter	12AT7	12AT7	9A	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Output	6CB6	6CB6	7CM	
V8	Sound IF Amp. Ratio Detector-AF Amplifier	6AU6	6AU6	7BK	
V9		6T8	6T8	9L	
V10	Audio Output	6V6GT	6V6GT	7AU	
V11	Sync Separator-Sync Phase Inv.	6SN7GT	6SN7GT	6BD	
V12	Vert. Oscillator	6C4	6C4	6BG	
V13	Vert. Output	6SN7GTA	6SN7GTA	6BD	
V14	Horiz. AFC	6AL5	6AL5	6BT	
V15	Horiz. Mult.	6SN7GT	6SN7GT	6BD	
V16	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	2C	
V19	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: MITCHELL PART No	REPLACEMENT DATA: SYLVANIA PART No	RMA BASE TYPE	NOTES
V20	17BP4A	17BP4A	12D	① Circuit changes necessary
		17BP4 ↓	12C	
		17MP4 ↓	12C	
		17RP4 ↓	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	RATING: VOLT	MITCHELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	±80	450	N-8038	AFH2-81		UPT82345			FP240	TVL-2770
B	±40	450								
C2A	±10	450	N-8039	AFH2-47		UPT1145			FP231	TVL-2750
B	±10	450								
C3A	±40	200	N-8040	AFH4-120		UPT426			FP453	TVL-4700
B	100	50								
C	10	450								
D	±80	200								
C4	100	250	N-8037	AFH1-38		UP8025		FH137 LTC59		TVL-1535
C5	4	50	N-8054	PRS150/4		BR550		TC30	TVA-1303	
C6	10	50	N-6912	PRS150/10		BR615		TC44	TVA-1409	
C7	100			SU00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C8A	1000			BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C9	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C10	1500		N-7371	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C11	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C12	25			SI25			GP1K-250	UC-5425	5GA-Q25	
C13	33						N750K-330		5TCU-Q33	
C14	47			SI47N750		TCN-47	N750K-470	NT-5447	5TCU-Q47	
C15	15					TCN-15	N750K-150		5TCU-Q15	
C16	30					TCN-30	N750 K 300			
C17	5			SI5		TCZ-4.7	GP1K-050	ZT-555	5GA-V5	
C18A	1000			BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C19	20			SI20NP0		TCZ-20	NP0K-200	ZT-542	5TCL-Q2	
C20	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C21	.1	200	N-1351	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C22	100		N-8015	SU00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C23	1000		N-8887	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C24	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C25	1500		N-7371	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C26	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C27	100		N-6015	SU00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C28	1000		N-8887	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29A	4000		N-7774	BPD-2X004	D6-402	TM5DD4	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C30	1500		N-7371	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C31	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C32	100		N-6015	SU00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C33	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C34A	4000		N-7774	BPD-2X004	D6-402	TM5DD4	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C35	100		N-6015	SU00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C36	100		N-8015	SU00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C37	.25	200	N-1479	P488-25		PJ2P25		PT4025	2TM-P25	
C38	.01	400	N-1344	P488-01	DF-103	PTE4S1	GP2-333-103	PT401	4TM-S1	
C39	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C40	10		N-7843	SI10NP0		TCZ-10	NP0K-100	ZT-541	5TCC-Q1	
C41	.05	200	N-1345	P288-5	DF-503	PJ2S5		PT405	2TM-S5	
C42	220	500	N-8106	1468-00025	D6-221	5WS7Z5	GP2K-221	MC240	1FM-325	
C43	47	500	N-7836	1469-00005		5R5Q5		MC245	ML B-225	
C44	.1	400	N-1623	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C45	.1	200	N-1351	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C46	.1	400	N-1623	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C47	5		N-7776	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCB-V47	
C48	68		N-7844					MO80-338-680		
C49	47	500	N-7836	1468-00005	D6-470	5WSQ5	GP1K-470	MC225	1FM-45	
C50	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C51	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C52	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C53	.02	400	N-1376	P488-02	DF-203	PTE4S2		PT412	4TM-S2	

CAPACITORS (CONT.)

ITEM No	RATING: CAP	RATING: VOLT	MITCHELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C54	2200	500	N-6891	1467-0025	D6-222	1W5D25	GP2-333-222	MC 460		
C55	3900	500	N-6852	1467-004	D6-392	1D5D4	GP2-333-392	MC463	1F M-24	
C56	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C57	.02	400	N-1376	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C58	.08	200	N-809_							
C59	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C60	100		N-8015	SU00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C61	.02	400	N-1376	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C62	.004	600	N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C63	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C64	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C65	.10	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C66	5000		N-8272	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C67	.1	400	N-1623	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C68	220	500	N-8106	1468-00025	D6-221	5WS7Z5	GP2K-221	MC240	1FM-325	Note 1
C69	.5	200	N-8896	P288-5				PT405	2TM P5	
C70A	.002			P688-002		PTE6D2		PT622		
B	.005		★N-8042	P688-005	★PC-100	PTE6D5	★1405-01	PT625	★10IC1	
C	.005			P688-005		PTE6D5		PT625		
C71	4700	500	N-6893	1464-005		IDR5D5		MC8465	MS-25	
C72	.1	400	N-1623	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C73	.25	400	N-2579	P488-25		PTE4P25		PT4025	4TM-P25	
C74	.05	600	N-1346	P686-05	DF-503	PTE6S5		PT615	6TM-S5	Note 1
C75	.02	600		P686-02	DF-203	PTE6S2		PT612	6TM-S2	Note 1
C76	.05	200	N-1345	P286-05	DF-503	PJ2S5		PT415	2TM-S5	Note 1
C77	1100	500	N-7783	1464-001		IR5D1		MC8255	MS-21	
C78	1100	500	N-7783	1464-001		IR5D1		MC8255	MS-21	
C79	.1	200	N-1351	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C80	.005	800	N-8105	P1088-05		PTE10S5		PT1615	M6-S5	
C81	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C82	.1	200	N-1351	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C83	3900	500	N-7373	1464-004		IDR5D4		MC8463	MS-24	
C84	330	500	N-7777	1469-00035						
C85	390	500	N-8890	1469-0004		5T5T4		MC8243	MS-34	
C86	370	500	N-8074	1469-0003		5R5T3		MC8241	MS-33	
C87	.25	400	N-2579	P488-25		PTE4P25		PT4025	4TM-P25	
C88	.5	200	N-8896	P288-5		PJ2P5		PT405	2TM-P5	
C89	1500	500	N-8073	1464-0015		IR5D15		MC8456		
C90	.25	600	N-6895	P684-25		PTE6P25		PT6025	6TM-P25	
C91	.05	800	N-8105	P1088-05		PTE10S5		PT1615	M6-S5	
C92	500	20000	N-8041	HV20C	TV3-502	MM-C20T5	413-501		20DX-T5	
C93	.01	600	N-6979	689ZGXY-01		PJ6S1		PT611	6TM-S1	
C94	.01	600	N-6979	689ZGXY-01		PJ6S1		PT611	6TM-S1	

Note 1. Not used in all models.
★ Items C70A, C70B, C70C, R70A, R70B, R70C are combined in one unit.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	MITCHELL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	50KΩ	½	N-8280	QII-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	50KΩ	½	N-8280	QII-123	AG-44-S	AB-31	U-35	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	1Meg	½	N-8279	QII-137	AG-61-S	AB-69	U-54	Vert Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	2500Ω	½	N-8158	QJ-23 *	RTV-242	SB5T-707-S	UF25SL	Contrast-Tapped ④ 500Ω-Panel
B	500KΩ	½					UR55A	Volume-Rear
C	Switch						US-26	Attach to R4B
R5A	3000Ω	½	N-8071	QII-112	AG-15-S	AB-8	U-8	Vert linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	2.5Meg	½	N-7341	QII-239	AG-84-S	AB-83	SU-585	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A

* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B17-111X & P1-200 (Panel)
B13-133 & R2-212 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MITCHELL PART No	REPLACEMENT DATA: IRC PART No.	NOTES
R7	100KΩ	½		BTS-100K	
R8	1000Ω	½		BTS-1000	
R9	2700Ω	½		BTS-2700	
R10	2200Ω	½		BTS-2200	
R11	100KΩ	½		BTS-100K	
R12	18KΩ-5%	½		BTS-18K 5%	
R13	470Ω	½		BTS-470	
R14	1000Ω	½	N-1349	BTS-100	Note 2
R15	4700Ω	½	N-7000	BTS-4700	Note 3
R16	6800Ω	½	N-4630		Note 4
R17	47KΩ	½	N-6237		Note 4
R18	82Ω	½	N-5857	BTS-82	
R19	1000Ω	½	N-1694	BTS-1000	
R20	1000Ω	½	N-1694	BTS-1000	
R21	15KΩ	½	N-6424	BTS-15K	
R22	47Ω	½	N-6237		
R23	82Ω	½	N-5857	BTS-82	
R24	1000Ω	½	N-1694	BTS-1000	
R25	15KΩ	2	N-2970	BTS-15K	
R26	47KΩ	2	N-8033	BTS-47K	
R27	13KΩ	4	N-8036	1 3/4A-13.5K	
R28	1000Ω	½	N-1694	BTS-1000	
R29	6800Ω	½	N-4630		
R30	150Ω	½	N-3663	BTS-150	
R31	560Ω	½	N-4280	BTS-560	
R32	820KΩ	½	N-4469	BTS-820K	
R33	680KΩ	½	N-7403	BTS 680K	
R34	6800Ω	½	N-4630	BTS-6800	
R35	100Ω	½	N-1349		
R36	1 Meg	½	N-2978	BTS-1 Meg	
R37	47Ω	½	N 8237		

RESISTORS (CONT.)

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MITCHELL PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R38	180Ω	½	N-4067	BTS-180	
R39	1500Ω	½	N-7398	BTS-1500	
R40	18KΩ	2	N-8031	BTB-18K	
R41	15KΩ	2	N-2970	BTB-15K	
R42	33KΩ	1	N-8044	BTA-33K	
R43	4700Ω	1	N-7154	BTA-4700	
R44	2200Ω	1	N-4896	BTS-2200	
R45	180KΩ	1		BTA-180K	Note 2
R46	6800Ω	1	N-4630	BTS 6800	Note 3
R47	68KΩ	1	N-4120	BTS-68K	
R48	47KΩ	1		BTS-47K	Note 4
R49	100KΩ	1	N-1778	BTS-100K	
R50	150KΩ	1	N-4468		
R51	27KΩ	1	N-7012	BTA-27K	
R52	8200Ω	1	N-8043	BTA- 8200	
R53	1000Ω	1	N-3341	BTS-1000	
R54	560Ω	1	N-4280	BTS- 560	
R55	15KΩ	1	N-6424	BTS-15K	
R56	270Ω	1	N-4121	BTS- 270	
R57	12KΩ	1	N-5690	BTS-12K	
R58	8.8Meg	1	N-4028	BTS- 8.8Meg	
R59	220KΩ	1	N-4899	BTS-220K	
R60	300KΩ-5%	1	N-8025	BTS-300K-5%	
R61	100KΩ	1	N-2973	BTS-100K	
R62	180KΩ	1	N-7003	BTS-180K	
R63	560KΩ	1	N-7790	BTS-560K	Note 4
R64	560KΩ	1	N-7790	BTS-560K	
R65	22KΩ	1	N-6012	BTS-22 K	
R66	1 Meg	1	N-2978	BTS-1Meg	
R67	2200Ω	1	N-4896	BTS-2200	
R68	1500Ω	1	N-7398	BTS-1500	

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MITCHELL PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R69	2700Ω	1	N-4047	BTS-2700	
R70A	220Ω	1	N-6973	BTS-220	
B	±200Ω	½	N-7405	BTS-8200	
C	±200Ω	1	N-2973	BTS-100K	
R71	1.2Meg	½	N-4470	BTS-1.2Meg	
R72	1 Meg	½	N-2978	BTS-1Meg	
R73	1800Ω	½	N-4281	BTS-1800	
R74	56KΩ	½	N-4823	BTS-56K	
R75	2.2Meg	½	N 4424	BTS-2.2Meg	
R76	820Ω	½		BTA 820	
R77	5000Ω	4	N-8287	1 3/4A-5000	
R78	18KΩ	2		BTS-18K	Note 5
R79	100KΩ	1	N-2973	BTS-100K	
R80	100KΩ	1	N-2973	BTS-100K	
R81	4.7Meg	½	N-4051	BTS-4.7Meg	
R82	56Ω	1	N 8155		

★ Items R70A, R70B, R70C, C70A, C70B, C70C are combined on one unit.
Note 1. Some models use a 1000Ω resistor in this application.
Note 2. Some models use a 390KΩ resistor in this application.
Note 3. Some models use a 15KΩ resistor in this application.
Note 4. Not used in all models.
Note 5. Some models use a 10KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MITCHELL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
T1	117VAC	660VCT	5VAC	6.3VAC ⑤ 6.3A	N-8009		P-3070	TP-356	R-35BC
	1.8A	.220ADC	3A	⑤ 6.3A					
				SEC. 4					
				④ 2.5A					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC	MITCHELL PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T2	170Ω	1KΩ	N-7764	A-8125 ↓	A-3000 ↓	TBO-2	A-97X ↓	Vert. Osc. Trans.
T3	270Ω	90 Tap	N-8104	A-8130	AVO-7 ↓	TFB-5		Horiz. Output Trans.
	tap ② 20Ω	tap ② 6Ω	N-8070 ②					
		SEC. 2						
T4	1300Ω	0.	N-7717	A-8123	A-3037	TSO-8	A-102X	Vert. Output Trans.
	Tap ② 12Ω							
T5A	80		N-8057-47	DY-8	MDF-70	TY-2	Y-12	Horiz. Deflection Coils
B	53Ω		N-8057 ③					Vert Deflection Coils

① Drill one new mtg. hole.
② Alternate Horiz. output trans.(Mount on wooden spacers.)
③ Alternate Deflection yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES PRI.	RATING: DC RES SEC.	MITCHELL PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T6	5 KΩ	3.2Ω	395Ω	7Ω	Part of speaker	A-3877	A-2930	RO-9 ↓	S-5X ↓	↓ Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V C IMP	REPLACEMENT DATA: MITCHELL PART No	REPLACEMENT DATA: JENSEN PART No	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	8"	PM	3.2Ω	N-8055	ST-115 (Mod P8-V)	8A2.	

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D C RESISTANCE	RATINGS: INDUCTANCE @ CURRENT 1000 (%)	REPLACEMENT DATA: MITCHELL PART No	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No
LJ	220A	65.	2.3 Hy	N-8064	C-2325 ①	C-2998 ①	TR-3300 ①	C-25A

① Drill one new mtg. hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	MITCHELL PART No.	MERIT PART No.	IRC PART No.	
L2	Ant. Trans.	0Ω	0Ω				
L3	Ant. Coil	0Ω					
L4	Fil. Choke	.2Ω					1.8 Microhenries
L5	RF, Mixer Grid and Osc. Coils	0Ω					Low Band
L6	RF Coil						High Band
L7	Mixer Grid Coil	0Ω					High Band
L8	Osc. Coil	0Ω					High Band
L9	Cathode Choke	.2Ω					1.8 Microhenries
L10	RF Choke	0Ω					Not used in all models.
L11	1st. Video IF	0Ω					
L12	2nd. Video IF	.2Ω		N-7745	TV-102		
L13	RF Choke	8.2Ω		N-7321		CL-1	10 Microhenries
L14	3rd. Video IF	.2Ω		N-7745	TV-103		
L15	RF Choke	8.2Ω		N-7321		CL-1	10 Microhenries
L16	4th. Video IF	.2Ω		N-7745	TV-102		
L17	Series Peaking Coil	10Ω		N-8060	TV-184 †		174 Microhenries wound on 18K resistor
L18	Shunt Peaking Coil	20Ω		N-8059			933 Microhenries
L19	Series Peaking Coil	8.5Ω		N-8061	TV-187		217 Microhenries wound on 22K resistor
L20	Shunt Peaking Coil	14Ω		N-8062	TV-188 ■		578 Microhenries wound on 5.6K resistor
L21	Sound IF	1.2Ω		N-7746	TV-151		
L22	Ratio Detect.	3.7Ω	.4 CT	N-7744	TV-110 *		Tertiary Winding .4Ω
L23	Horiz. Osc.	70Ω		N-7748	TV-163		
L24	Width Coil	21Ω		N-8134			
L25	Horiz. Lin.	35Ω		N-8063	MWC-1		

* Drill new mtg. holes.
† Parallel with 18K resistor
■ Parallel with 5.6K resistor

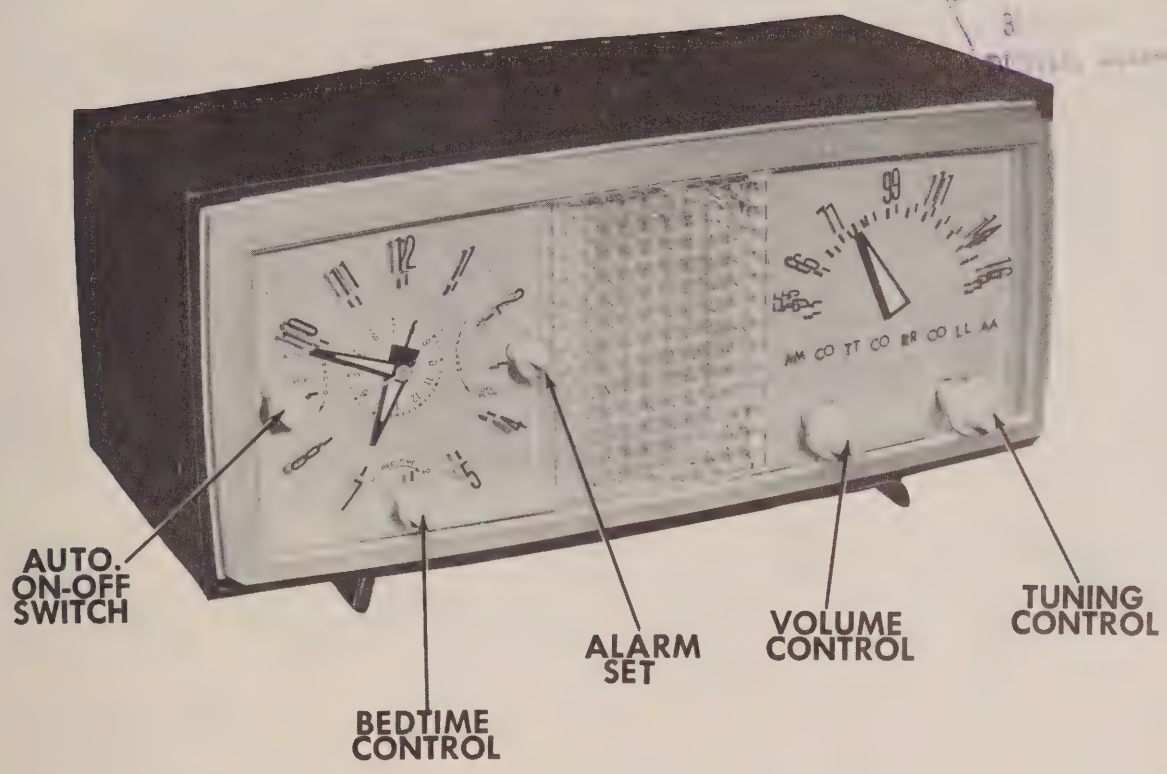
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MITCHELL PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG (P/T)	1/4A 250V			318.250		GJV-1/4	

MISCELLANEOUS

ITEM No.	PART NAME	MITCHELL PART No.	NOTES
M2	RF Tuner	N-7750	
M3	Switch	N-8099	TV-Phono
M4	Focus Magnet	N-8067	
M5	Ion Trap	N-8272	
B2	Trimmer	N-7375	Horiz. Drive (20-270MMF)

MOTOROLA MODELS
62C1, 62C2, 62C3 (Ch. HS-299)



MOTOROLA MODELS
62C1, 62C2, 62C3 (Ch. HS-299)

MOTOROLA MODEL 62C1 (Ch. HS-299)

TRADE NAME	Motorola Models 62C1, 62C2, 62C3 (Ch. HS-299)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Six)	Types 12BD6 RF Amp., 12BE6 Conv., 12BD6 IF Amp., 12AT6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator plates of middle section of tuning gang. Low side to B-.	455 KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620 KC	"	"	A5	"
3.		Loop	1400 KC	Tune to 1400 KC signal	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	12BD6	12BD6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BD6	12BD6	7BK	
V4	Det-AVC-AF Amp.	12AT6	12AT6	7BT	
V5	Audio Output	35C5	35C4	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	23B600855	PRS150/50-30		BRD5315		TCD497	TVA-2450	Red
B	30	150								Green
C2	10000		21R482726	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	Note 1
C3	10000		21R482726	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C4	10000		21R482726	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	Note 1
C5	12		21R119131				N330K-120			
C6	.05	200	8R9821	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C7A	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
B	2000		21B482847	BPD-002	DD-202	TM5D2	801-002	DC-522	34C3	
C	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
D	5000			BPD-005	DD-502	TM5D5	811-005	DC-525		
C8	10000		21R482726	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C9	.047	400	8R490232	489ZGXY-05		PJ4S5		PT415	4TM-S5	
C10	.1	400	8K620968	RC3		NF10178			72P52	Note 2

Note 1. Not used in all Models.
Note 2. Special 455 KC resonate capacitor. Replace only with like unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	18A610819	Q13-137	AG-63-Z	BSK-70	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

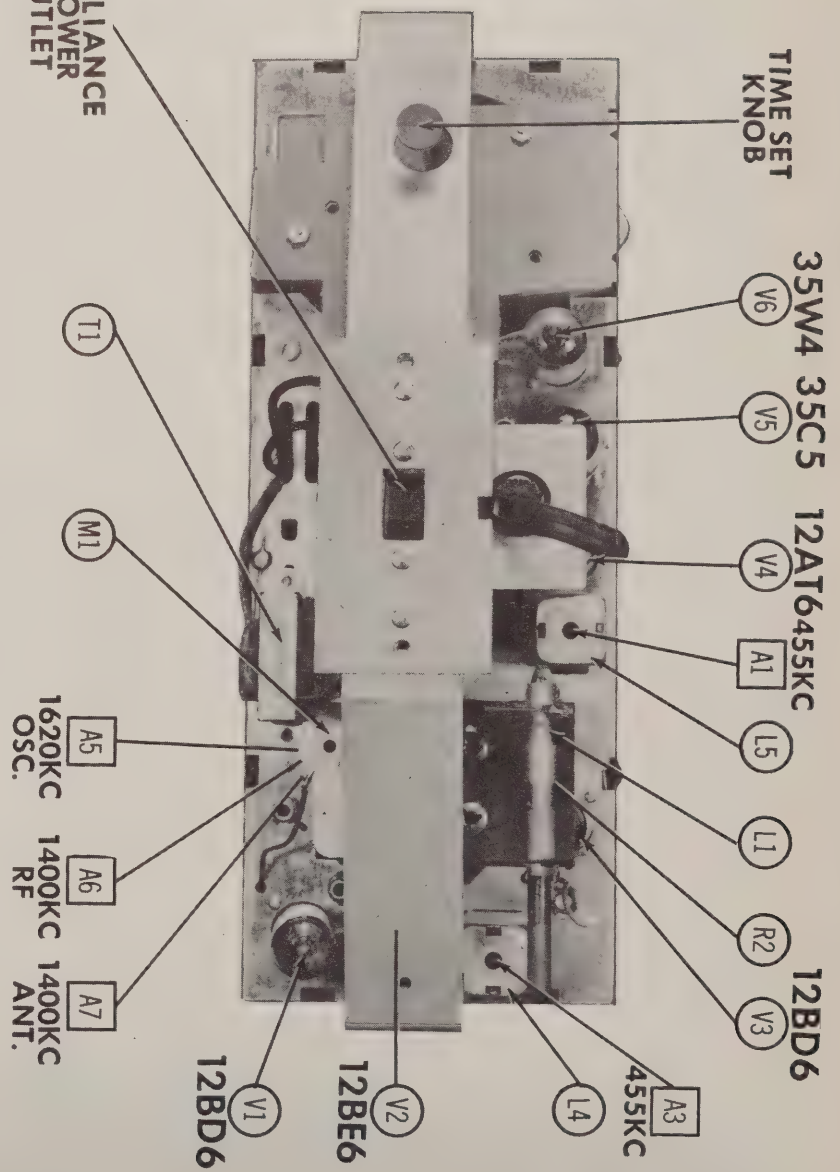
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	NOTES
R2	1 Meg	1/10	6R6046	BTS-1 Meg	
R3	47Ω	1/10	6R5550		
R4	1 Meg	1/2	6R6004	BTS-1 Meg	
R5	22KΩ	1/2	6R6028	BTS-22K	
R6	68Ω	1/2	6R6007		
R7	2.2Meg	1/2	6R3927	BTS-2.2Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	NOTES
R8	10 Meg	1/10	6R2109	BTS-10Meg	
R9	470KΩ	1/10	6R6032	BTS-470K	
R10	470KΩ	1/2	6R6032	BTS-470K	
R11	150Ω	1/2	6R6373	BTS-150	
R12	27Ω	1/2	6R5683		
R13	1000Ω	1	6R476004	BTA-1000	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.26KΩ	3.2Ω	255Ω	.52Ω	25K610738	A-3332	A-3025	RO-2 ①	S-1X ①	① Drill one new mtg. hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	50K610739	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

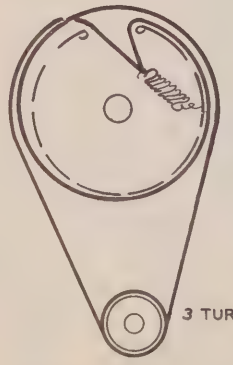
ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	IRC PART No.	
L1	Loop Ant.	3.4Ω		24K610726			
L2	RF Coil	10.5Ω		24B610698			
L3	Osc. Coil.	1.2Ω	12.5Ω	24A610695			
L4	Input IF	18.5Ω	18.5Ω	24C485553	BC-352		
L5	Output IF	18.5Ω	18.5Ω	24C485553	BC-353		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuning Capacitor	19B610699	Pulley Included (20-245MMF, 16-235MMF, 15-85MMF)
	Cabinet	16E610742	Walnut
	Cabinet	16K610743	Ivory
	Cabinet	16K610744	Green
	Cover, Cabinet Front	1X611053	Retainer Springs included
	Knob	36K610818	Clock Control (3 Used)
	Knob	36K610816	Radio Control (2 Used)
	Knob	36K601002	Time Set
	Clock Assembly	590610689	Complete, Less Knobs

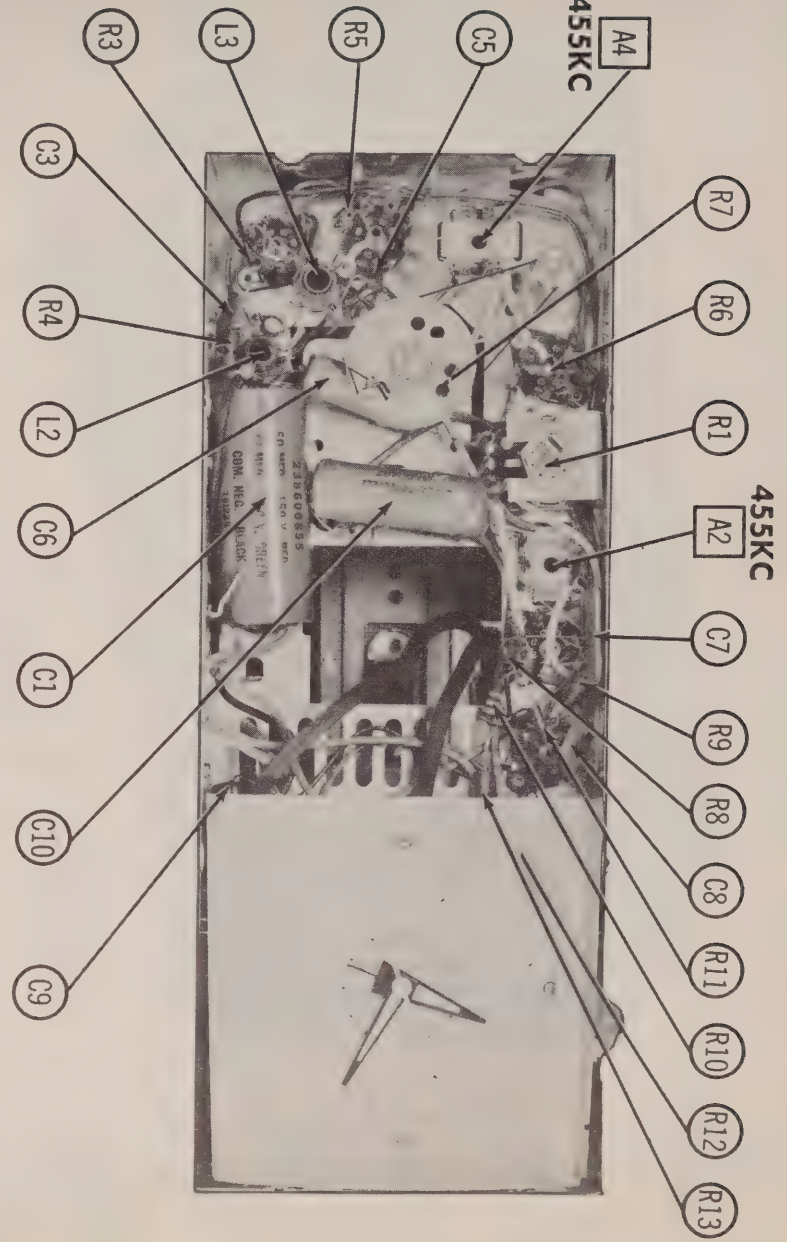
DISSEMBLY INSTRUCTIONS

1. Remove 4 screws. (2 rear & 2 bottom).
2. Pull chassis out from front of cabinet.
3. Remove 5 knobs (3 clock & 2 radio).
4. Release 8 spring clips. Remove cabinet front plate from bottom of chassis.
5. Remove dial indicator. Remove 2 screws. Remove dial plate.
6. Remove 3 screws. Remove speaker.

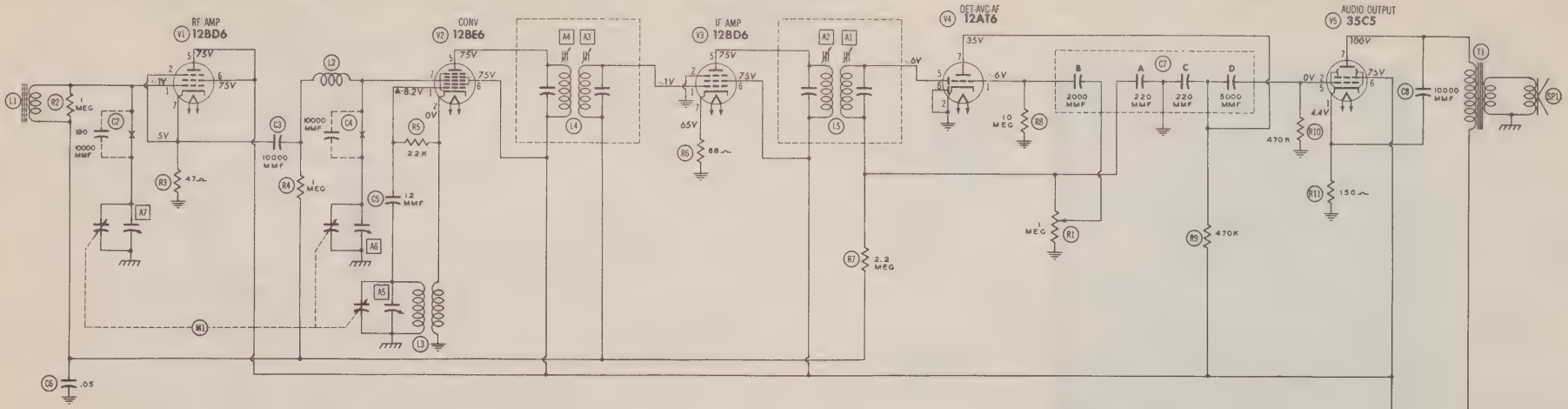


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW

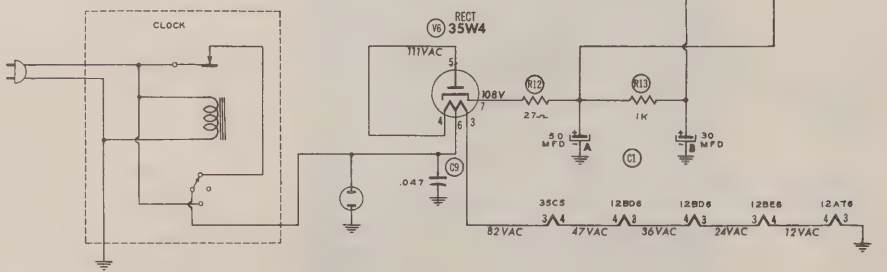


MOTOROLA MODEL 62C1 (Ch. HS-299)



IF=455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BD6	3.2Meg	47Ω	24Ω	36Ω	†1KΩ	†1KΩ	47Ω
V 2	12BE6	22KΩ	1.2Ω	24Ω	12Ω	†1KΩ	†1KΩ	4.2Meg
V 3	12BD6	3.2Meg	0Ω	36Ω	48Ω	†1KΩ	†1KΩ	68Ω
V 4	12AT6	10 Meg	0Ω	0Ω	12Ω	1 Meg	0Ω	†470KΩ
V 5	35C5	150Ω	470KΩ	83Ω	48Ω	470KΩ	†1KΩ	†282Ω
V 6	35W4	†27Ω	INF	83Ω	118Ω	110Ω	110Ω	130KΩ

† MEASURED FROM PIN 7 OF V6
▲ TAKEN WITH VACUUM TUBE VOLTMETER

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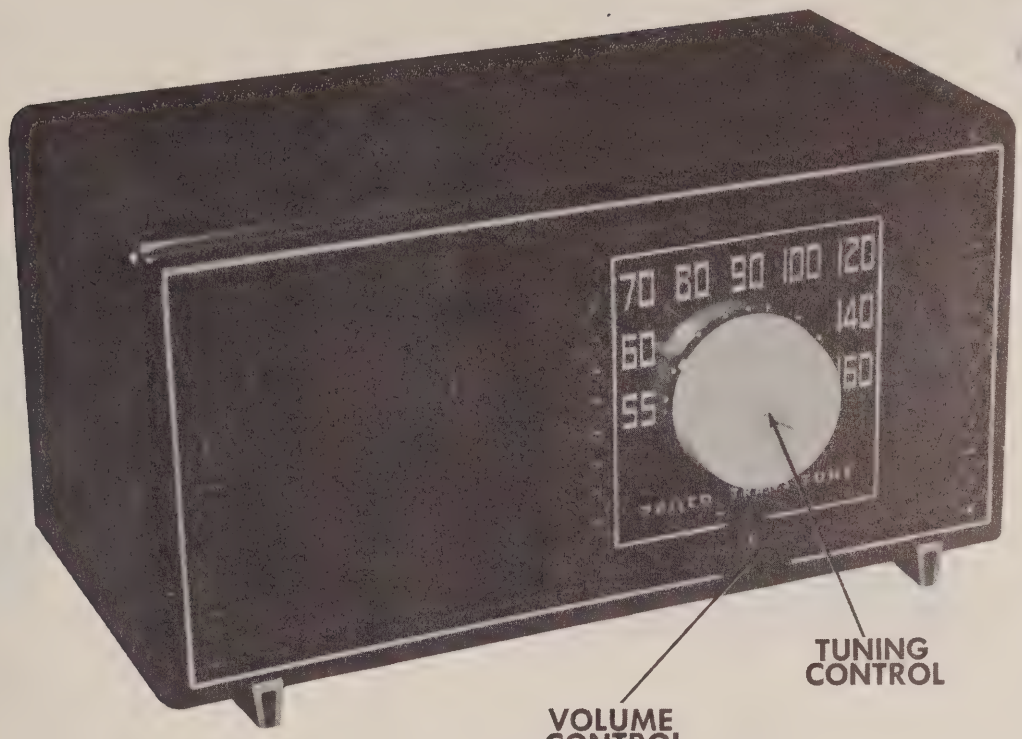
189-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHILCO MODEL
53-560 (Code 121)



PHILCO MODEL
53-560 (Code 121)

TRADE NAME	Philco Model 53-560 (Code 121)
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator plates of oscillator section of tuning gang. Low side to B-.	455 KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620 KC	1620KC	"	A5	Fully open tuning gang and insert a .006 inch non-metallic shim between the heel of rotor and the top of stator plates. Close tuning gang to just touch the shim and then remove shim without distrubing setting. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500 KC	Tune to 1500 KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	35C5	35C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	30	150	30-2573	PRS150/40-20-20		BBRT32V-215		TN129	TVA-3444	Orange
B	25	150								Red
C	20	150								Blue
C2	.05	200	45-3505-28	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	47		30-1230-4				N220K-470			
C4	7.5		30-1224-83				N220K-7R5			
C5	.05	200	45-3505-28	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C7A	.005									
B	250		♦30-6001		♦PC-70		♦1406-01		♦104C4	
C										
C8	.022	400	45-3505-43	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C9	.047	400	45-3505-62	489ZGXY-05		PJ4S5		PT4147	4TM-S47	
C10	.1	400	45-3505-47	P488-1		PTE4P1		PT401	4TM-P1	

♦ Items C7A, C7B. C7C, R7A, R7B are combined in one unit.
When replacing items separately C7B and C7C should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	33-5566-41	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

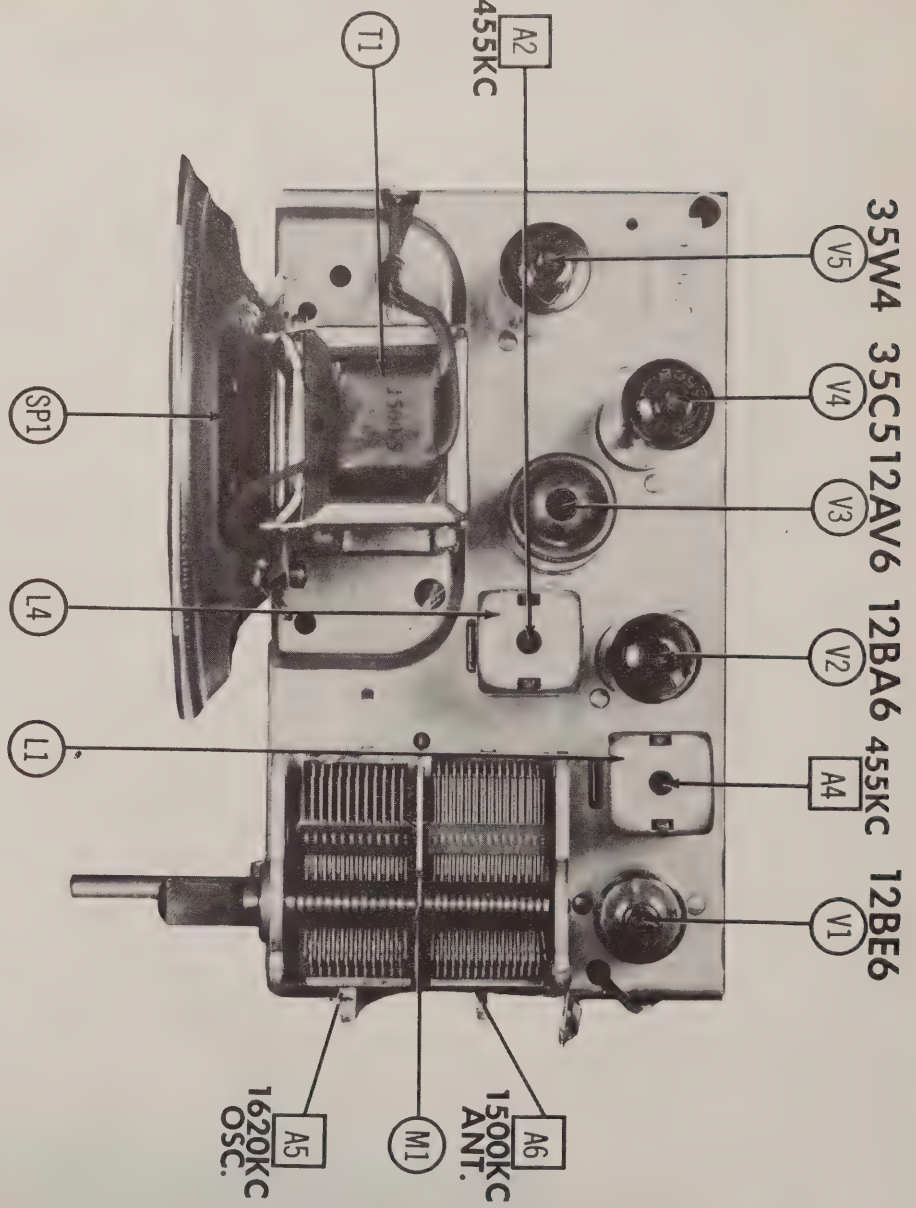
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R2	22KΩ	½	66-3228340	BTS-22K	
R3	4700Ω	½	66-2748340	BTS-4700	
R4	2.2Meg	½	66-5228340	BTS-2.2Meg	
R5	47KΩ	½	66-3478340	BTS-47K	
R6	10 Meg	½	66-6108340	BTS-10 Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R7A	500KΩ	½	♦ 30-6001		
B	500KΩ	½			
R8	150Ω	½	66-1158340	BTS-150	
R9	220Ω	1	66-1224340	BTA-220	
R10	1000Ω	½	66-2108340	BTS-1000	
R11	*	*	33-1343-3		

* Special resistor 100Ω Hot, 800Ω Cold.
♦ Items R7A, R7B, C7A, C7B, C7C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.7KΩ	3.4Ω	220Ω	.8Ω	32-8384	A-3332①	A-2928 ①	RO-201①	S-1 X ①	① Bend mtg. tags down file out slots, mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.4Ω	36-1627-8①	ST-113 Mod. P4-X	4A07	① Alternate 4" speaker.

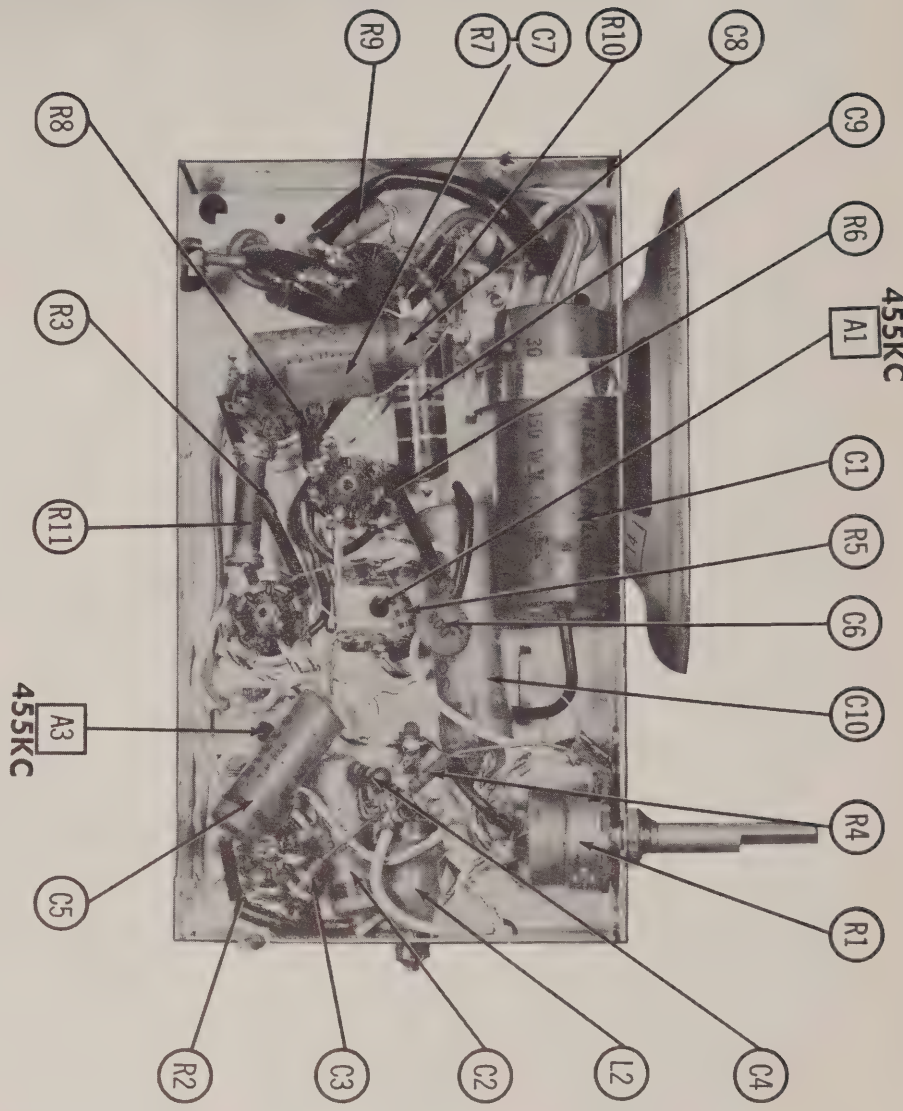
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	PHILCO PART No.	MERIT PART No.	IRC PART No.	
L1	Loop Ant.	3.2Ω		76-7705			Includes back cover.
L2	Osc. Coil	1.1Ω	7Ω	32-4453-6			
L3	Input IF	15Ω	15Ω	32-4161A	BC-352		
L4	Output IF	15Ω	15Ω	32-4240A	BC-355		

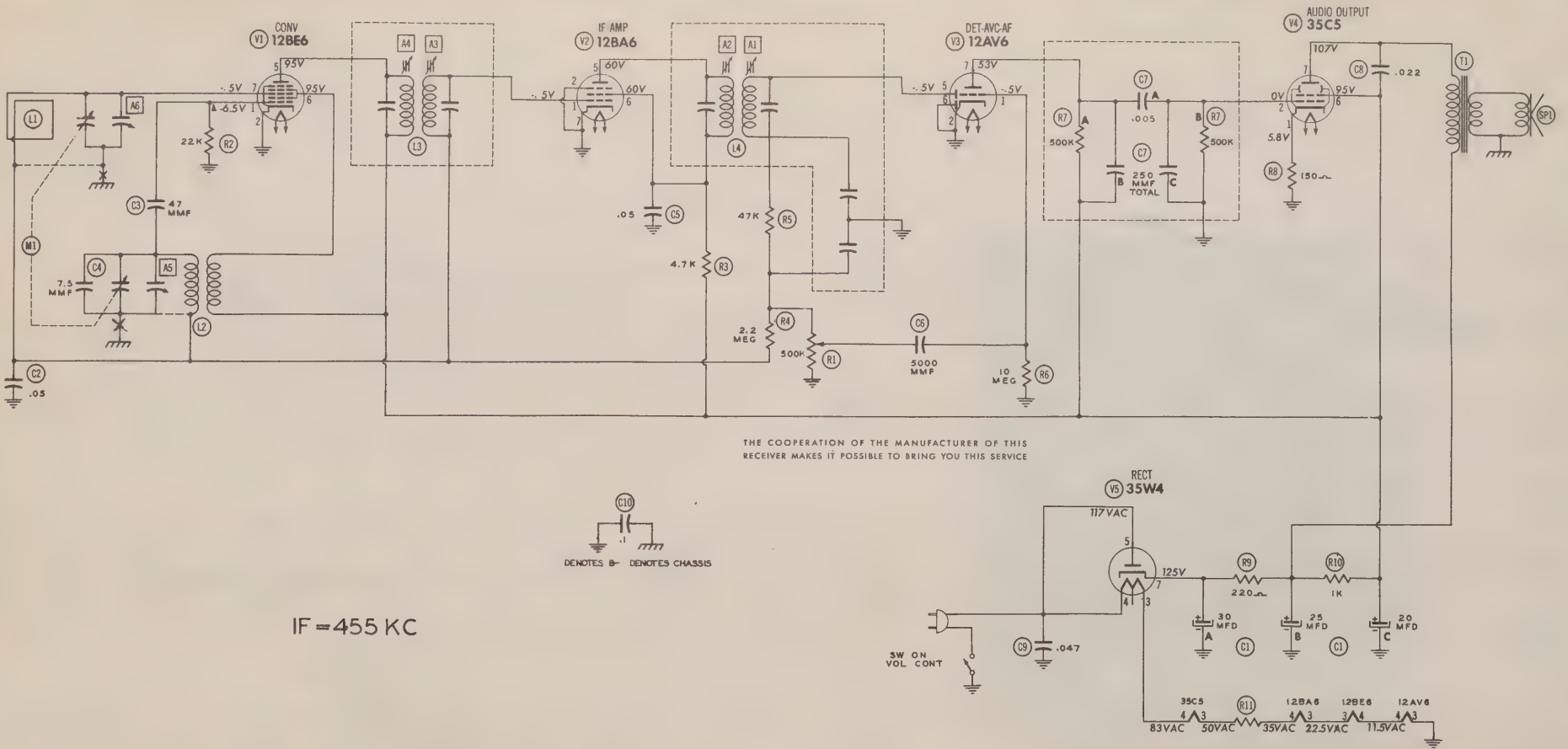
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	Tuning Capacitor	31-2751-13	32-495MMF, 20-170MMF
	Cabinet	10921	Ebony
	Cabinet	10921-1	Mahogany
	Cabinet	10921-2	Ivory
	Knob	54-4969	Tuning
	Knob	27-4815-8	Off/on Volume (Ebony)
	Knob	27-4815-10	Off/on Volume (Mahogany)
	Knob	54-4118	Off/on Volume (Ivory)

CHASSIS—BOTTOM VIEW



PHILCO MODEL 53-560 (Code 121)



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	0Ω	24Ω	12Ω	†1.4KΩ	†1.4KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	24Ω	36Ω	†6KΩ	†6KΩ	0Ω
V 3	12AV6	10Meg	0Ω	0Ω	12Ω	550KΩ	0Ω	†500KΩ
V 4	35C5	150Ω	500KΩ	916Ω	951Ω	500KΩ	†1.22KΩ	†440Ω
V 5	35W4	†220Ω	†220Ω	951Ω	986Ω	986Ω	978Ω	700KΩ

† MEASURED FROM PIN #7, V5.
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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189-13

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

RAYTHEON MODELS C-1735A, C-1736A (Ch. 17T1), C-2108A, C-2110A, C-2111A (Ch. 21T1), M-1733A (Ch. 17T1), M-2107A (Ch. 21T1)

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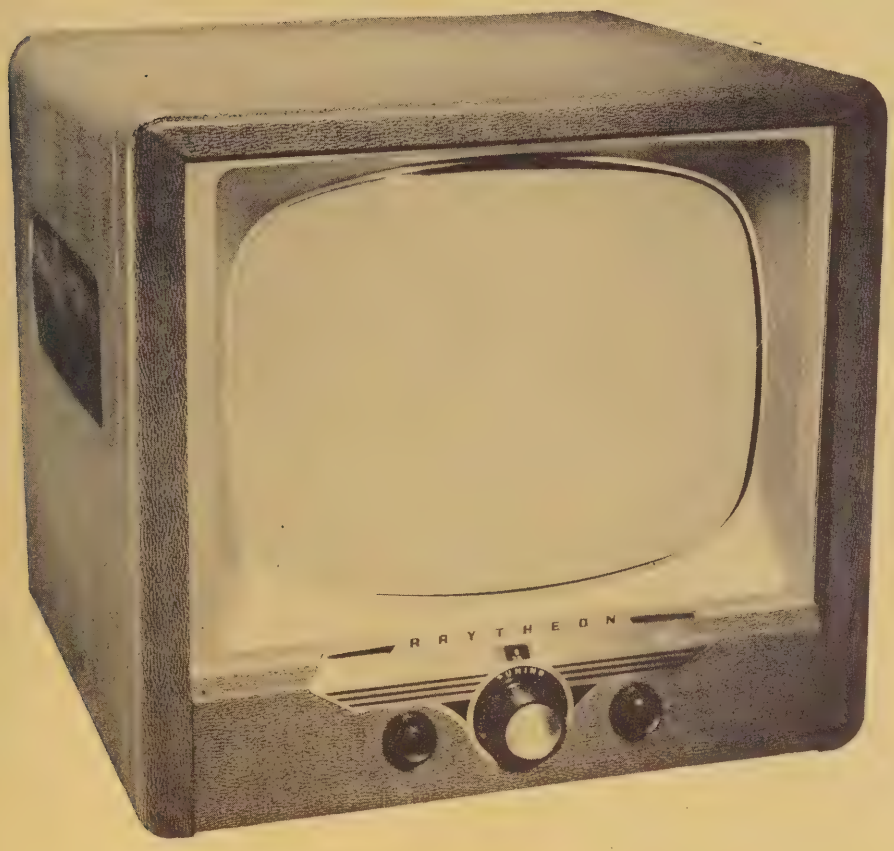

MODEL M-1733A

RAYTHEON MODELS C-1735A, C-1736A (Ch. 17T1), C-2108A, C-2110A, C-2111A (Ch. 21T1), M-1733A (Ch. 17T1), M-2107A (Ch. 21T1)

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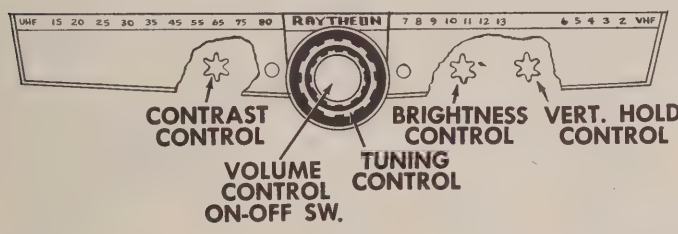
RAYTHEON MODELS C-1735A, C-1736A (Ch. 17T1), C-2108A, C-2110A, C-2111A (Ch. 21T1), M-1733A (Ch. 17T1), M-2107A (Ch. 21T1)


UHF 15 20 25 30 35 45 55 65 75 80
RAYTHEON
7 8 9 10 11 12 13
6 5 4 3 2 VHF
CONTRAST CONTROL
VOLUME CONTROL ON-OFF SW.
TUNING CONTROL
BRIGHTNESS CONTROL
VERT. HOLD CONTROL

FRONT PANEL CONTROLS ON 21 INCH MODELS

RAYTHEON MODEL M-1733A

TRADE NAME	Raytheon Models C-1735A, C-1736A (Ch. 17T1), C-2108A, C-2110A, C-2111A (Ch. 21T1), M-1733A (Ch. 17T1), M- 2107A (Ch. 21T1)
MANUFACTURER	Raytheon Television & Radio Corp., 5921 W. Dickens Ave., Chicago 39, Ill.
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	110-115 Volts AC-60 Cycle RATING 1.58 Amp. @ 115 Volts AC
TUNING RANGE	Channels 2 thru 13 (Continuous Tuning)

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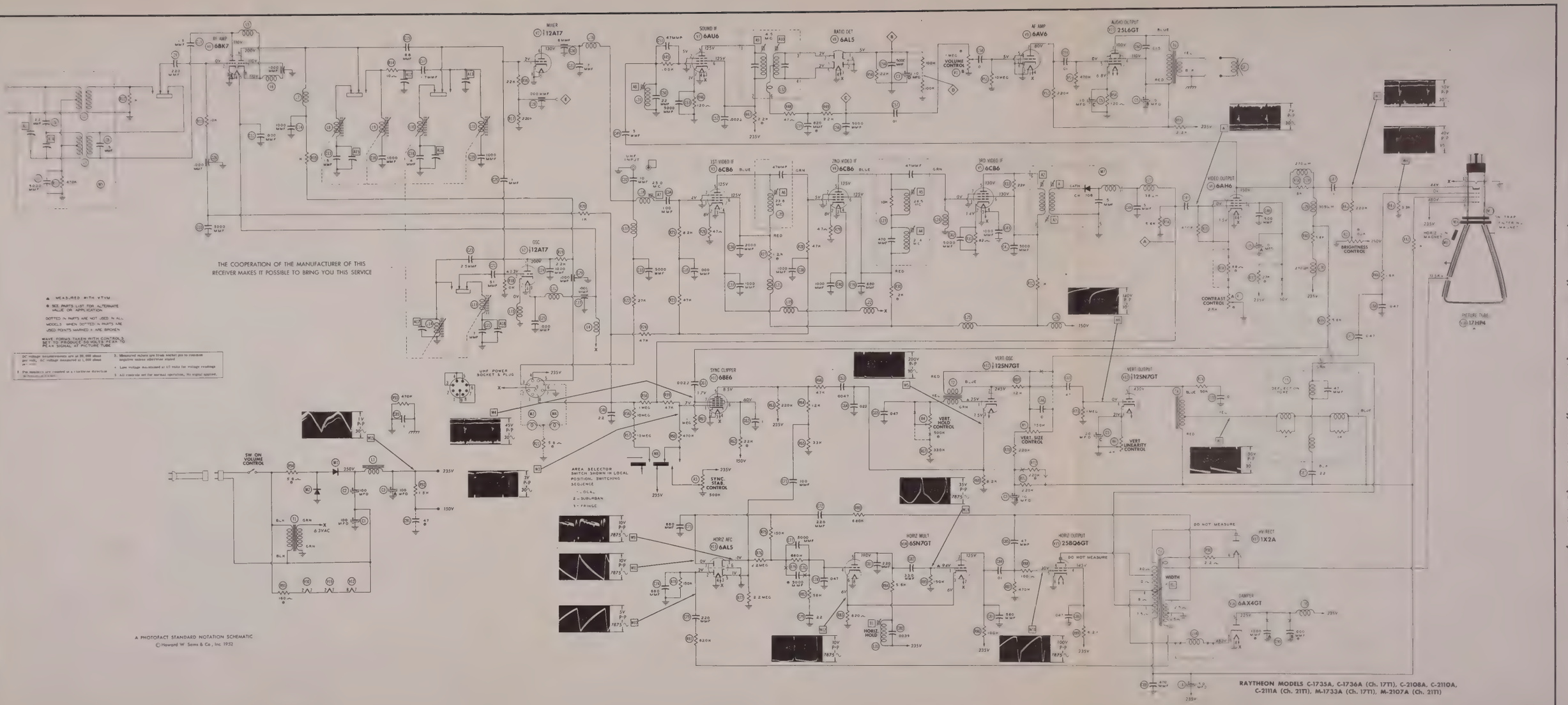
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
▲ MEASURED WITH VTVM
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE JOINED POINTS MARKED × ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
1. Measured values are from socket pin to common negative unless otherwise stated
2. Low voltage measured at 117 volts for voltage readings
3. All controls set for normal operation, No signal applied.
! Pin numbers are counted in a counterclockwise direction when viewed from bottom of socket.
RF AMP 6BK7
MIXER 12AT7
OSC 12AT7
SOUND IF 6AU6
RATIO DET 6AL5
AF AMP 6AV6
AUDIO OUTPUT 25L6GT
VOLUME CONTROL
1ST VIDEO IF 6CB6
2ND VIDEO IF 6CB6
3RD VIDEO IF 6CB6
VIDEO OUTPUT 6AH6
CONTRAST CONTROL
BRIGHTNESS CONTROL
PICTURE TUBE 17HP4
UHF POWER SOCKET & PLUG
SYNC CLIPPER 6BE6
SYNC STAB CONTROL
AREA SELECTOR SWITCH SHOWN IN LOCAL POSITION. SWITCHING SEQUENCE
0 - LOCAL
2 - SUBURBAN
3 - FRINGE
VERT OSC 12SN7GT
VERT HOLD CONTROL
VERT SIZE CONTROL
VERT OUTPUT 12SN7GT
VERT LINEARITY CONTROL
DEFLECTION YOKE
HORIZ AFC 6AL5
HORIZ MULT 6SN7GT
HORIZ HOLD
HORIZ OUTPUT 25BQ6GT
DO NOT MEASURE
HV RECT 1X2A
WIDTH
DAMPER 6AX4GT
SW ON VOLUME CONTROL
6.3VAC
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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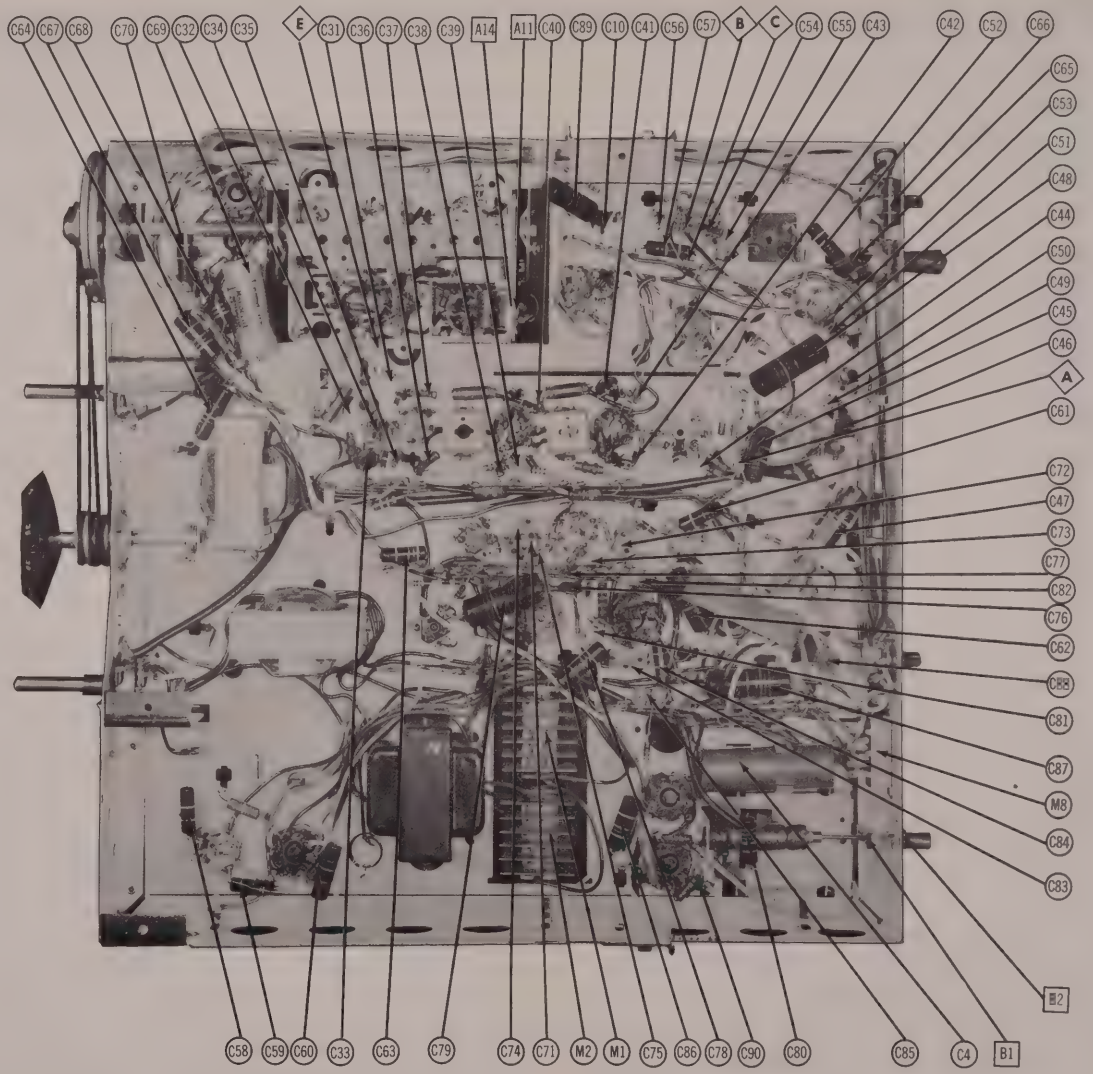
RAYTHEON MODELS C-1735A, C-1736A (Ch. 17T1), C-2108A, C-2110A, C-2111A (Ch. 21T1), M-1733A (Ch. 17T1), M-2107A (Ch. 21T1)

RAYTHEON MODELS C-1735A, C-1736A (Ch. 17T1), C-2108A, C-2110A, C-2111A (Ch. 21T1), M-1733A (Ch. 17T1), M-2107A (Ch. 21T1)

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW - CAPACITOR AND ALIGNMENT IDENTIFICATION

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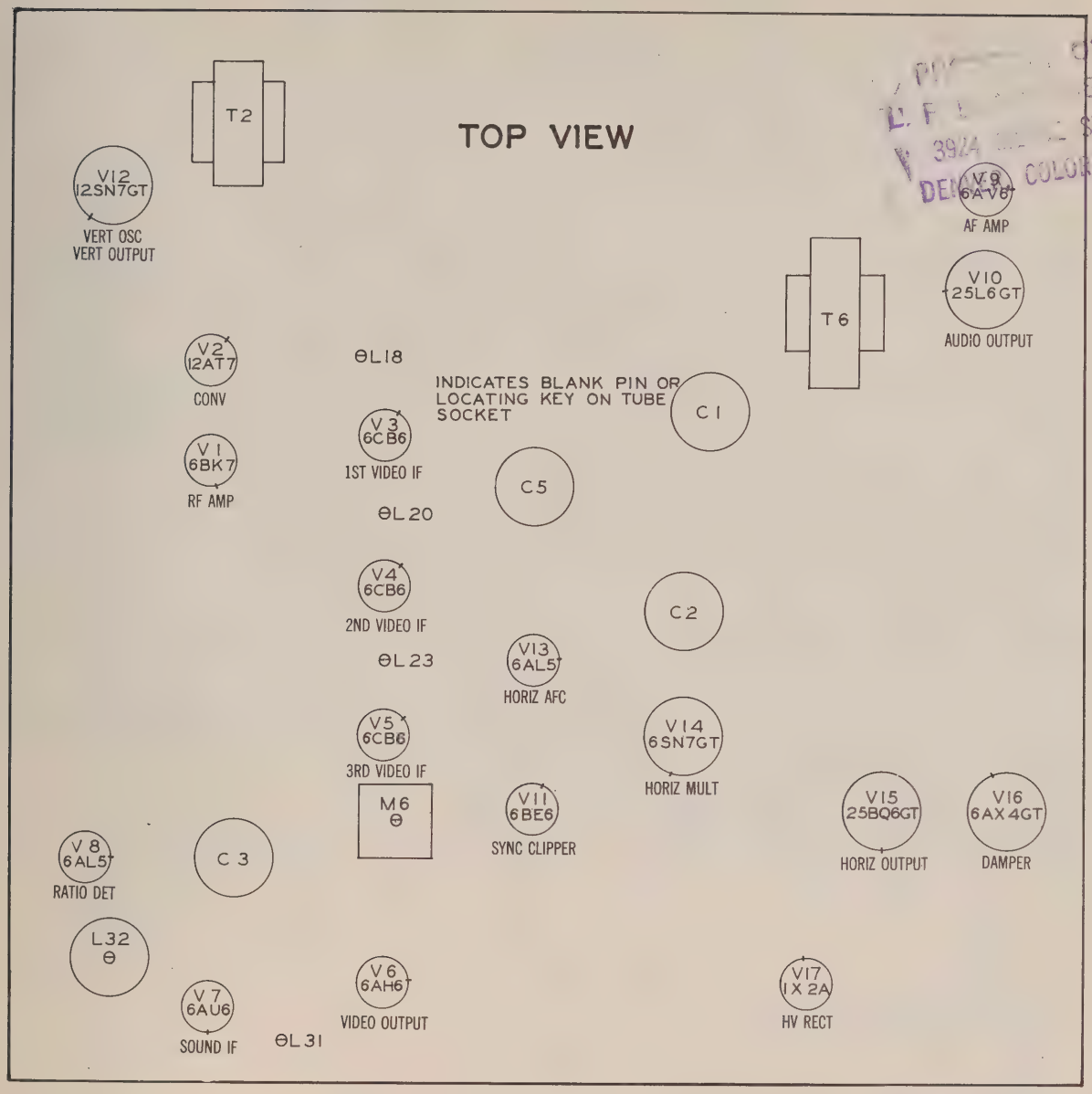
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-Selenium Rectifiers (M1, M2)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster- V2, V3, V4, V5
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V6, V8
Has pic, no sound-V7, V8, V9, V10

SYNC FAILURE
No vert. sync.-V11, V12
No horiz. sync.-V11, V13, V14
No vert. or horiz. sync.-V11

SWEEP FAILURE
No raster, has sound-V14, V15, V16, V17, V18
No vertical deflection-V12
Poor vert. linearity or foldover-V12
Poor horiz. linearity or foldover-V14, V15, V16
Narrow picture-V14, V15, V16, V17, M1 & M2
Vert. off freq.-V12
Horiz. off freq.-V13, V14

NOTE: SINCE THIS RECEIVER EMPLOYS TUBES USED IN A SERIES-PARALLEL FILAMENT NETWORK, AN OPEN FILAMENT IN ANY TUBE IN SERIES MAY CAUSE THE SET TO BE INOPERATIVE.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.
Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Set "Finge-Suburban'Local" switch to "Fringe" position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis.	25MC (10MC Swp)	23.5MC 26.2MC	13	Vert. amp to point (A). Low side to chassis.	A1, A2, A3	Connect a short between pin 5 and 6 of V4. Adjust generator for 1 Volt peak on scope. Adjust A1, A2 and A3 for response as in fig. 1. A3 is an adjustable coupling rod underneath the chassis.
2.	"	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	Not used.	21.4MC	"	Use VTVM. DC probe to point (A). Common to chassis.	A4	Remove the short maintain 2 volt reading at VTVM. Adjust A4 for maximum deflection.
3.	"	"	"	26.5MC	"	"	A5	Adjust for maximum deflection.
4.	"	"	"	21.4MC	"	"	A4	"
5.	"	"	"	23.8MC	"	"	A6	"
6.	"	"	"	25.0MC	"	"	A7	"
7.	"	"	25MC (10MC Swp)	23.5MC 26.5MC	"	Vert. amp to point (A). Low side to chassis.	A1	Adjust A1 for flat top response curve as in fig. 2. If response is not shown in fig. 2 repeat the alignment procedure.

4.5MC TRAP ALIGNMENT

Tune in a TV station and adjust the fine tuning until sound bars just appear in the picture.
Starting from extreme counter clockwise position adjust A8 in clockwise direction for minimum sound indication in picture. Do not adjust for maximum sound from speaker.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.
Short the antenna terminals to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A9	Adjust for maximum deflection.
9.	"	"	"	"	DC probe to point (C) Common to point (D)	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Short the antenna terminals to chassis.
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point (B). Low side to chassis.	A9	Disconnect stabilizer capacitor C3D. Adjust for curve of maximum amplitude and symmetry as in fig. 3.
9.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A10	Reconnect capacitor C3D. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 4. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Preset the trimmer screws as shown in fig. 5.
Turn the tuner to the top of its stroke in low band position.
Adjust coil cores so that bottoms of cores are 1.6 inch above bottoms of coil forms.
Connect a .001MFD capacitor across scope input terminals and 10KΩ in series with hot lead of scope.

LOW BAND RF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. Amp. to point (E). Low side to chassis.	A11, A12, A13	Adjust for maximum response as in fig. 6.
11.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check for response similar to fig. 6. If necessary retouch A12 and A13 for nearest approach to fig. 6 response on all all low band channels.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

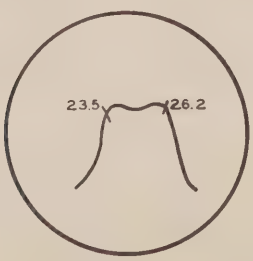


FIG.1

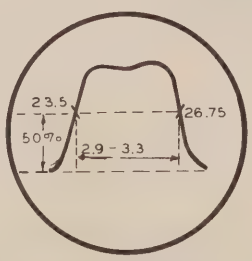


FIG.2

FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND RF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point ⟨E⟩. Low side to chassis.	A14, A15 A16	Adjust for maximum response as in fig. 6.
13.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check for response similar to fig. 6. If necessary retouch A15 and A16 for nearest approach to fig. 6 response on all high band channels.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			

OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characeristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC Swp)	83.25MC	6	Vert. amp to point ⟨A⟩. Low side to chassis.	A17	Adjust to place video marker at 50% on low frequency slope of response as in fig. 7.
15.	"	"	69MC (10MC Swp)	67.25MC	4	"		Check for marker placement as in fig. 7. If necessary make slignt compromise adjustments of A17 for best marker placement across low band channels.
			57MC (10MC Swp)	55.25MC	2			
16.	"	"	213MC (10MC Swp)	211.25MC	13	"	A18	Adjust to place video marker at 50% on low frequency slope of response as in fig. 7.
17.	"	"	195MC (10MC Swp)	193.25MC	10	"		Check for marker placement as in fig. 7. If necessary make slight compromise adjustment of A18 for best marker placement across high band channels.
			177MC (10MC Swp)	175.25MC	7			

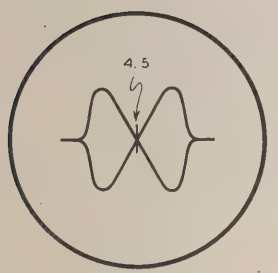


FIG. 4

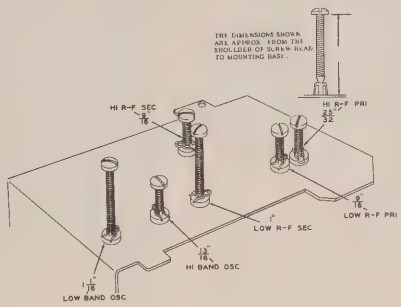

THE DIMENSIONS SHOWN ARE APPROX. FROM THE SHOULDER OF SCREW HEAD TO MOUNTING BASE.
HI R-F SEC
HI R-F PRI
LOW R-F SEC
LOW R-F PRI
HI BAND OSC
LOW BAND OSC

FIG. 5

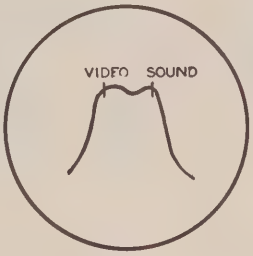


FIG. 6

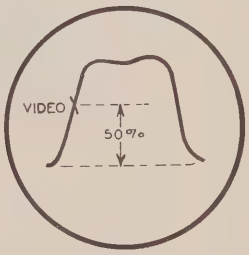


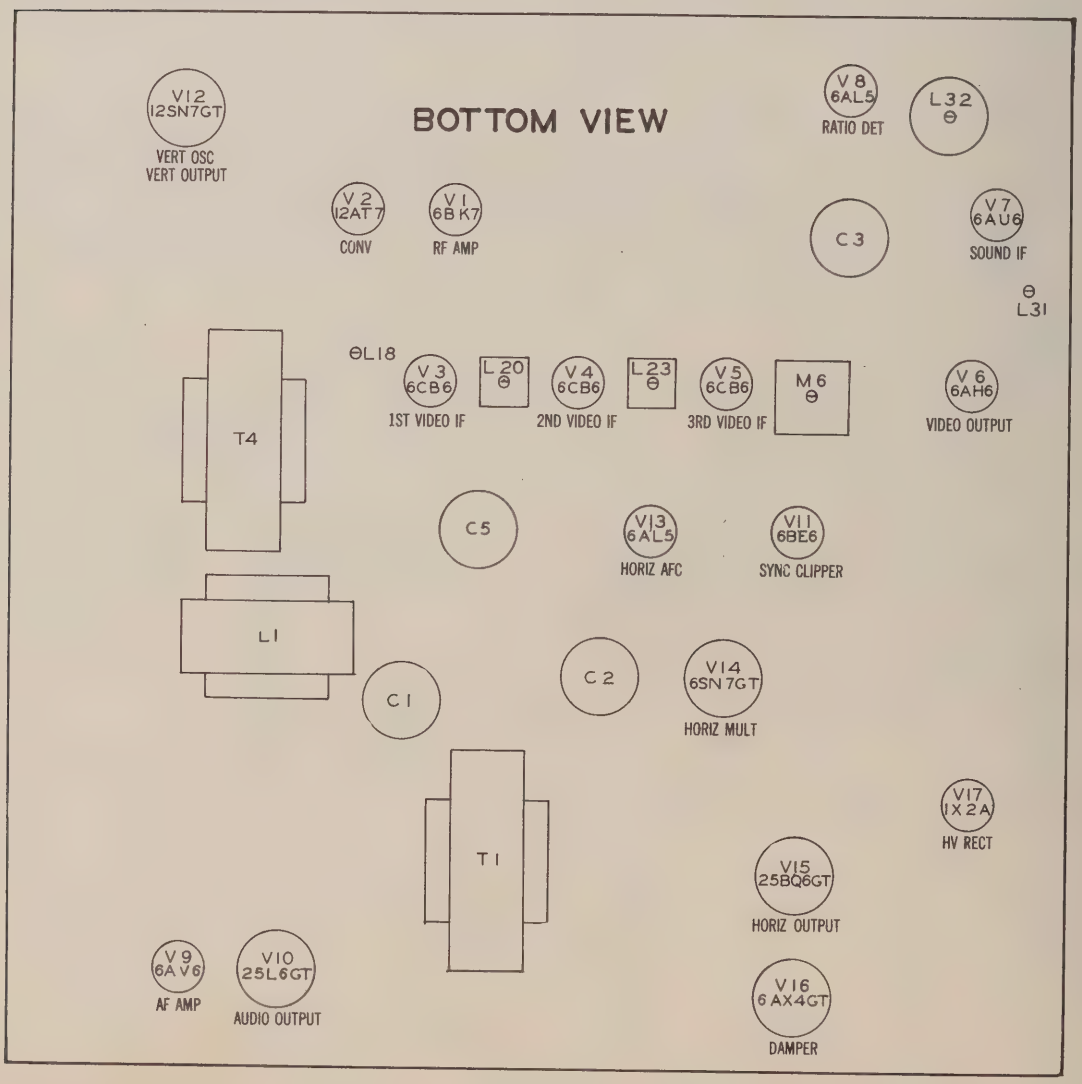
FIG. 7

RAYTHEON MODELS C-1735A, C-1736A (Ch. 17TI), C-2108A, C-2110A, C-2111A (Ch. 21TI), M-1733A (Ch. 17TI), M-2107A (Ch. 21TI)

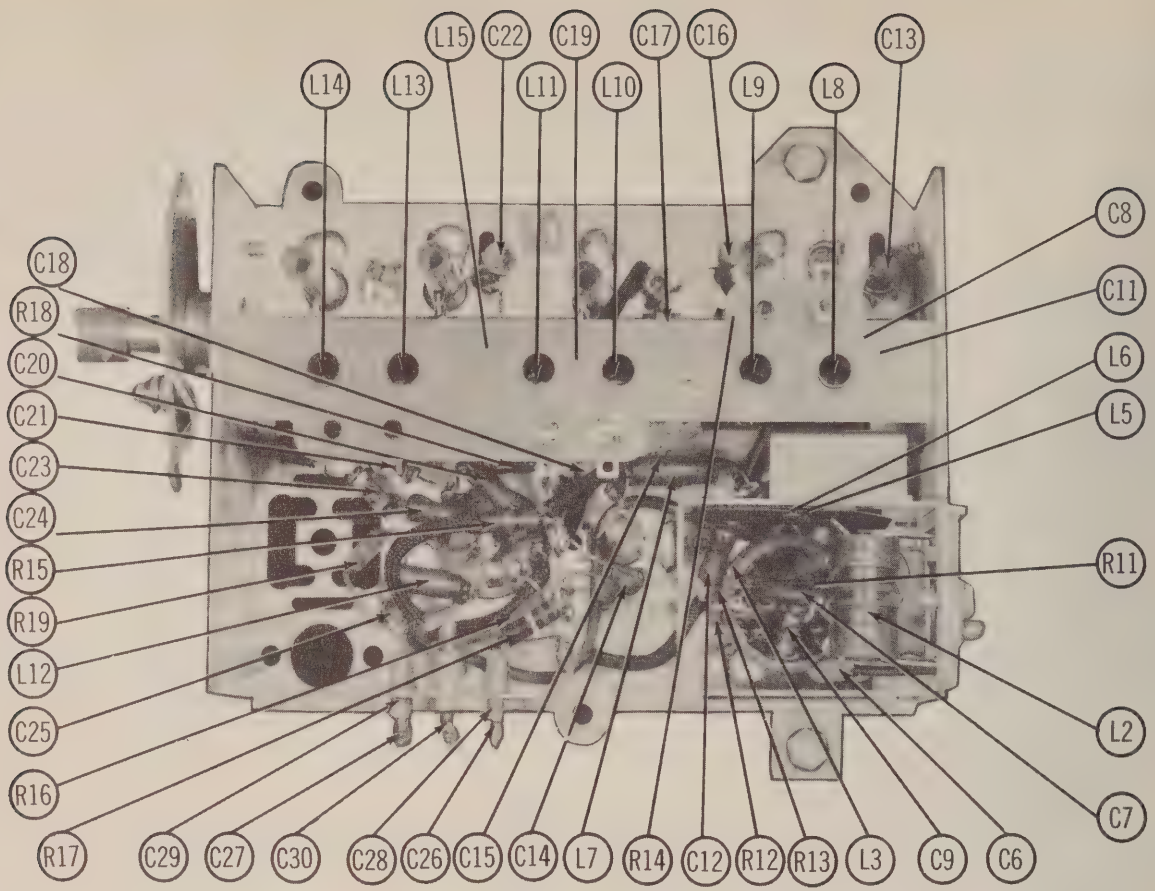
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	1 Meg	0Ω	0Ω	.1Ω	†1.1KΩ	INF	INF	0Ω
V 2	12AT7	†2.3KΩ	10KΩ	2Ω	0Ω	0Ω	†27KΩ	242KΩ	0Ω	.1Ω
V 3	6CB6	1.1Meg	47Ω	0Ω	.1Ω	†2.8KΩ	†2.8KΩ	0Ω		
V 4	6CB6	1.1Meg	47Ω	0Ω	.1Ω	†2.8KΩ	†2.8KΩ	0Ω		
V 5	6CB6	2Ω	82Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	0Ω		
V 6	6AH6	470K	140Ω	.1Ω	0Ω	†5.6KΩ	†1.6KΩ	140Ω		
V 7	6AU6	100KΩ	0Ω	.1Ω	0Ω	†3.7KΩ	†3.7KΩ	120Ω		
V 8	6AL5	22KΩ	0Ω	.1Ω	0Ω	INF	0Ω	INF		
V 9	6AV6	10 Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†220KΩ		
V 10	25L6GT	INF	■32Ω	†2.4KΩ	†2.2KΩ	470KΩ	INF	■24Ω	120Ω	
V 11	6BE6	53KΩ	0Ω	0Ω	.1Ω	45KΩ	†24KΩ	1 Meg		
V 12	12SN7GT	660KΩ	#1Meg	8.2KΩ	1 Meg	#1.1KΩ	2KΩ	■7Ω	■15Ω	
V 13	6AL5	2.2Meg	150KΩ	.1Ω	0Ω	2.2Meg	0Ω	4.5Meg		
V 14	6SN7GT	150KΩ	†100KΩ	820Ω	5 Meg	†5.6KΩ	820Ω	.1Ω	0Ω	
V 15	25BQ6GT	INF	■24Ω	INF	†8.2KΩ	470KΩ	INF	■15KΩ	0Ω	Top Cap #12Ω
V 16	6AX4GT	INF	5 Meg	5Meg	INF	†72Ω	44KΩ	.1Ω	0Ω	
V 17	1X2A	PINS 1 - 9 HAVE INF RESISTANCE								Top Cap # 200Ω
V 18	17HP4	0Ω	3.3KΩ	Pin 6 †71Ω	Pin 10 #1KΩ	Pin 11 250KΩ	Pin 12 .1Ω			

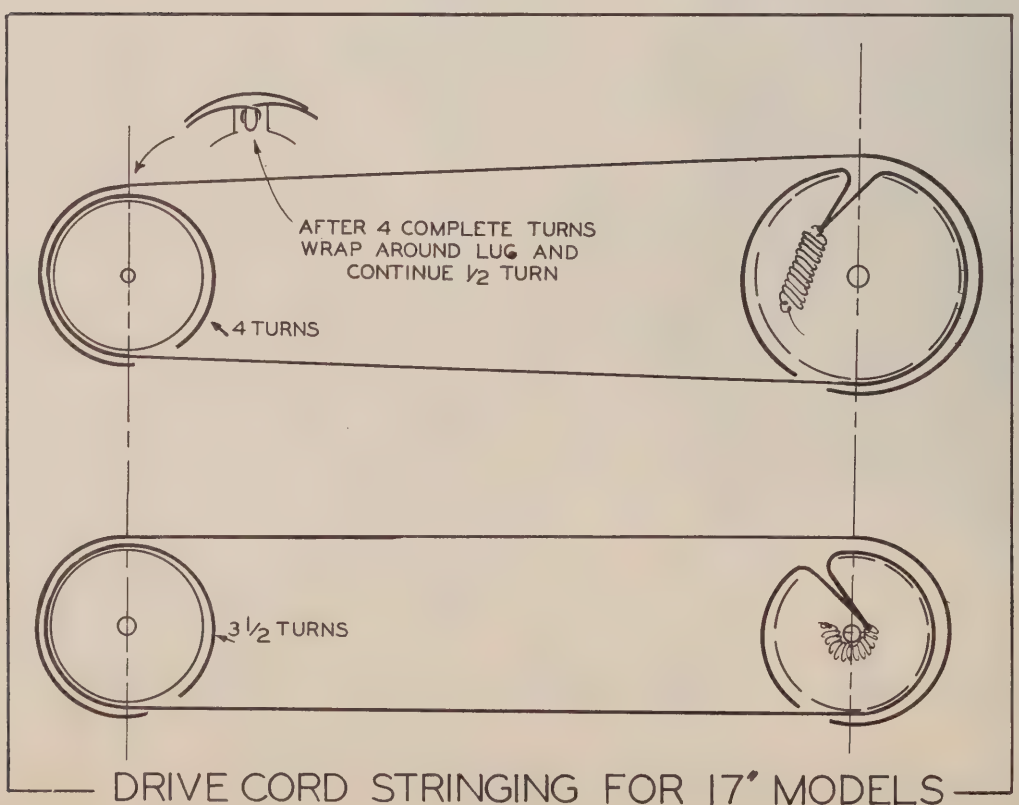
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED.
AREA SELECTOR SWITCH IN LOCAL POSITION
† MEASURED FROM OUTPUT OF M1
# MEASURED FROM PIN 3 OF V16
■ MEASURED FROM OFF-ON SWITCH



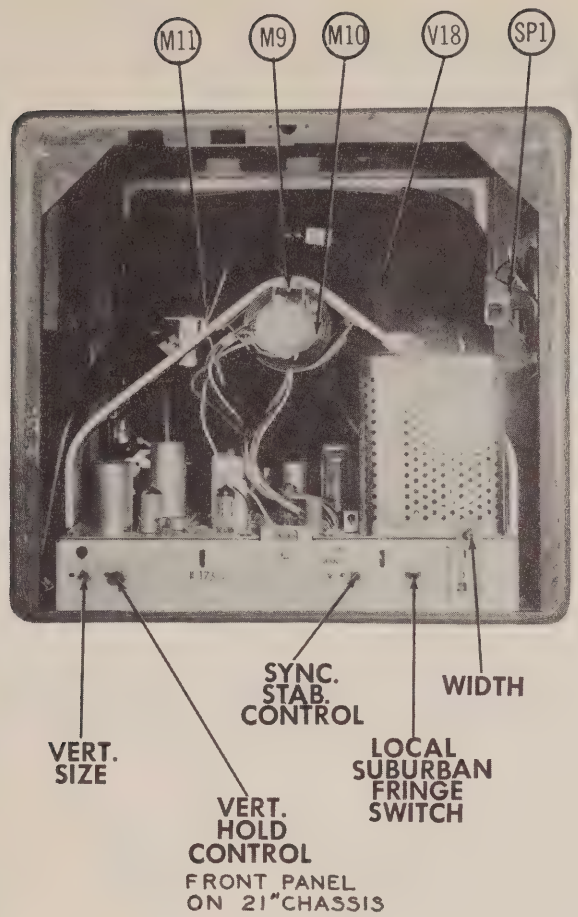
TUBE PLACEMENT CHART



RF-TUNER



DRIVE CORD STRINGING FOR 17" MODELS



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the contrast control for normal contrast.

Turn the horizontal hold thumb screw clockwise until it reaches its stop, then counter clockwise 2 full turns. The thumb screw is a vermier adjustment and should then be in the center of its range.

Adjust the horizontal hold slug (B1) until the picture synchronizes horizontally and make any further adjustment of B1 necessary to set it to the middle of its range of synchronization.

Adjust the width slug (B2) for picture slightly wider than necessary to fill the picture mask horizontally. Adjustment of B2 may affect the vertical size slightly.

HORIZONTAL LINEARITY MAGNET

Adjust the position of the horizontal linearity magnet (found near the neck of the picture tube) for best linearity at the right hand side of the picture.

SYNC STABILIZER CONTROL

The sync stabilizer control should be adjusted to the position which results in the most stable synchronization.

DISASSEMBLY INSTRUCTIONS

① Remove 4 push on type control knobs from front panel.

② Remove 2 screws. Remove antenna bracket front rear cover.

③ Remove 4 wood screws. Remove rear cover.

④ Disconnect speaker. Remove 2 speaker nuts. Remove speaker.

⑤ Remove 6 chassis bolts. Remove chassis.

NOTE: FOR PICTURE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RAYTHEON PART No.	STANDARD REPLACEMENT	BMA BASE TYPE	NOTES
V1	RF Amplifier	6BK7	6BK7	9AJ	
V2	Converter	12AT7	12AT7	9A	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp	6CB6	6CB6	7CM	
V5	3rd Video IF Amp	6CB6	6CB6	7CM	
V6	Video Output	6AH6	6AH6	7BK	
V7	Sound IF Amp	6AU6	6AU6	7AC	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	AF Amplifier	6AV6	6AV6	7BT	
V10	Audio Output	25L6GT	25L6GT	7AC	
V11	Sync Clipper	6BE6	6BE6	7CH	
V12	Vert. Oscillator-Vert. Output	12BN7GT	12BN7GT	6BD	
V13	Horiz. AFC	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6BN7GT	6BN7GT	8BD	
V15	Horiz. Output	25BQ6GT	25BQ6GT	8AM	
V16	Damper	6AX4GT	6AX4GT	4CG	
V17	HV Rectifier	1X2A	1X2A	8Y	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: RAYTHEON PART No.	SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V18A	17HP4	17HP4	12C	① Circuit Changes necessary.
		17RP4	12C	
B	21FP4A	21FP4A	12C	
		21FP4 ①	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RAYTHEON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	100	150	8C-20684	AFHI-31		UPE10015		FP116	TVL-1535	
C2	100	150	8C-20709	AFHI-21		UPE10015		FP116	TVL-1535	
C3A	⌀100	300	8C-20808	AFH4-110					TVL-4638	
B	⌀10	400		LPR325/100						
C	100	25								
D	⌀10	75								
C4	50	300	8C-21274	PRS450/40		BR6045		TC48	TVA-1813	
C5A	⌀10	200	8C-20954	AFHJ-124		UPH135		FP330.5	TVL-3580	
B	⌀10	300								
C	10	15								
C6	22		8G-13892		TCN-22		N750K-220			STCU-G22
C7	5000		8G-13962	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C8	1.5		8G-12495-8	SIL5NP0	TCZ-1.5		NP0K-1R5	TT5615	5TCCB-V15	
C9	220		8G-16045	SII20	D6-201		GP2K-221	UC-5332	5GA-T22	
C10	5000		8G-13962	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C11	1.5		8G-12495-8	SIL5NP0	TCZ-1.5		NP0K-1R5	TT-5515	5TCCB-V15	
C12	1000		8G-13201	SII500	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C13	15		8G-13017	SII5NP0	TCZ-15		NP0K-150	TT-5415	5TCC-Q15	
C14	1000		8G-13201	SII500	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C15	.68		8G-12495-1		TCZ-.68		NP0K-R68			
C16	1000		8G-13201	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C17	1.7		8G-12495-8							
C18	4		8G-19214				NP0K-040			
C19	1000		8G-13201	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C20	1		8G-12495-2		TCZ-1		NP0K-010		5TCCB-V1	
C21	51		8G-11891		TCN-51		N750L-510			
C22	7		8G-15224				N750K-070			
C23	2.5		8G-19588							
C24	1000		8G-13201	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C25	1000		8G-13201	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C26	1000		8G-20978							
C27	1000		8G-20978							
C28	1000		8G-20978							
C29	1000		8G-20978							
C30	6		8G-20879							
C31	7		8G-15224				N750K-070			
C32	10		8G-11789	SII0NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C33	5000		8G-13962	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C34	100	500	8F3-8	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C35	1000		8G-13201	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C36	1000		8G-19522	SI2000	D6-202	TM5D2	GP2-333-202	UC-5322	5HK-D2	
C37	1000		8G-13201	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C38	1000		8G-13201	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C39	1000	500	8G-21035	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C40	1000		8G-13201	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C41	5000		8G-13962	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C42	5000		8G-13962	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C43	1000		8G-13201	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C44	5		8G-12186	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C45	.1	200	8F-18095	P288-1	DF-104	P2ZP1	PTE4P22	PT4021	2TM-P21	
C46	5000		8G-13962	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C47	.1	400	8J-16083	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C48	.22	200	8J-16082	P488-22		PTE4P22		PT4025	2TM-P25	
C49	5		8G-12186	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C50	22		8G-13909	SI22NP0	TCZ-22		NP0K-220		5TCC-Q22	
C51	47		8G-12186	SI47	D6-471	5W5G5	GP1K-470	UC-5447	5GA-Q47	
C52	.0022	400	8J-20634	P488-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C53	5000		8G-13962	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C54	5000		8G-13962	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C55	820	500								Note 1
C56	5000		8G-21207	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C57	.01	400	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C58	.01	400	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C59	.01	400	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C60	.015	400	8J-20594	P488-015		PTE5S15		TP400	5TM-S15	
C61	.0022	400	8J-20590	P888-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C62	.1	400	8J-16083	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C63	.0047	400	8J-20592	P888-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C64	.022	200	8J-16086	P488-022	DF-203	PTE4S22		PT4123	4TM-S22	
C65	.047	200	8J-16096	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RAYTHEON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C66	.01	400	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C67	.047	400	8J-16081	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C68	.047	200	8J-16096	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C69	.47	400	8J-21505	484-5		PJ4P5		PT405	4TM-P5	
C70	.01	600	8J-16097	P488-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C71	100	500	8F3-115	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C72	220	500	8F3-117	1469-00025		5R5T25		MCB240	MS-325	
C73	680	500	8F3-123	1469-00007		5R5T7			MS-37	
C74	680	500	8F3-123	1469-00007		5R5T7			MS-37	
C75	220	500	8F3-117	1469-00025		5R5T25		MCB240	MS-325	
C76	5000		8G-13962	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	Note 2
C77	5000		8G-13962	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C78	.047	200	8J-16096	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C79	.22	200	8J-16082	P488-22		PTE4P22		PT4025	2TM-P22	
C80	.0033	600	8J-20613	1484-004		2DR5D4		MC863	MS-24	
C81	220	500	8F3-117	1469-00025		5R5T25		MCB240	MS-325	
C82	330	500	8F3-119	1469-00035						
C83	680	500	8F3-122							
C84	.01	400	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C85	47		8G-13198	SI47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C86	.047	400	8J-16081	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C87	.22	200	8J-16082	P488-22		PTE4P22		PT4025	2TM-P22	
C88	470	1000	8G-21440					MCK347		
C89	.1	400	8J-16083	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C90A	1000			BPD-2X001	DD-2-102	TM5DD1	81Z-001	DCD-521	5HK-2D1	Note 2
B	1000									Note 2
C91	.47	600	8J-21505	584-5		PJ6P5		PT605	TC-5	Note 2

Note 1. Some Models use 560MMF in this application (Part #8F3-122)
Note 2. Not used in all Models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RAYTHEON Part No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2500Ω		10A-20956				UF252L	Contrast-Panel - Note 1
B	1 Meg						UR16A	Volume-Rear - Note 1
C	Switch						US-26	Attach to R1B
R2A	100KΩ		10B-21304	QII-128	AG-49-8	B-40	U-41	Brightness - Note 1
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½	10B-20558	QII-133	AG-58-8	AB-59	SU-50	Sync Stability
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R3A
R4A	500KΩ	½	10B-20558	QII-133	AG-58-8	AB-59	SU-50	Vert. Hold - Note 1
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	750KΩ	½	10B-19220	QII-126	AG-61-8	AB-59	U-51	Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6	4000Ω	1	10B-21052					Vert. Linearity-Wire Wound - 2000Ω Stop
R7	2500Ω	½	10B-21476					Contrast- Note 2
R8	100KΩ	½	10B-17275					Brightness - Note 2
R9	1 Meg.	½	10A-21484					Volume & Switch- Note 2
R10	500KΩ	½	10B-21456					Vert. Hold- Note 2

Note 1. Used on Ch. 17T1
Note 2. Used on Ch. 21T1

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATTS	REPLACEMENT DATA: RAYTHEON PART No.	IRC PART No.	NOTES
R11	470KΩ	½	9B1-29	BTS-470K	
R12	1000Ω	½	9B1-82	BTS-1000	
R13	10KΩ	½	9B1-74	BTS-10K	
R14	10Ω	½	9B1-38		
R15	1000Ω	½	9B1-13	BTS-1000	
R16	22KΩ	½	9B1-78	BTS-22K	
R17	220KΩ	½	9B1-27		
R18	10KΩ	½	9B1-74	BTS-10K	
R19	2200Ω	½	9B1-86	BTS-2200	
R20	1000Ω	½	9B1-82	BTS-1000	Note 1
R21	5.6Ω	½	9C1-1072		
R22	27KΩ	½	9B2-79	BTA-27K	
R23	47KΩ	½	9B1-82	BTS-47K	
R24	47KΩ	½	9B1-82	BTS-47K	
R25	8200Ω	½	9B1-73		
R26	47Ω	½	9B1-46		
R27	1200Ω	½	9B1-13	BTS-1200	Note 7
R28	47KΩ	½	9B1-82		
R29	47Ω	½	9B1-46		
R30	1200Ω	½	9B1-13	BTS-1200	Note 7
R31	82Ω	½	9B1-49	BTS-82	
R32	1000Ω	½	9B1-13	BTS-1000	
R33	22KΩ	½	9B1-78	BTS-22K	
R34	56000-5%	½	9B1-71	BTS-5600-5%	
R35	470KΩ	½	9B1-94	BTS-470K	
R36	680Ω	½			Note 2
R37	27KΩ	1	9B2-79	BTA-27K	Note 2
R38	15KΩ	½	9B1-76	BTS-15K	
R39	5600Ω	½	9B1-71	BTS-5600	
R40	5600Ω	2	9B4 71	BTB 5600	
R41	220KΩ	½	9B1-90	BTS-220K	
R42	1000Ω	½	9B1-82	BTS-1000	
R43	3300Ω	½	9B1-88	BTS-3300	
R44	1800Ω	½	9B1-85	BTS-1800	
R45	100KΩ	½	9B1-98		
R46	120Ω	½	9B1-51	BTS-120	
R47	2200Ω	½		BTS-2200	Note 3
R48	47Ω	½	9B1-46		
R49	22KΩ	½	9B1-78	BTS-22K	
R50	22KΩ	½	9B1-78	BTS-22K	
R51	10 Meg	½	9B1-110	BTS-10 Meg	
R52	220KΩ	½	9B1-90	BTS-220K	

ITEM No.	RATING: OHMS	RATING: WATTS	REPLACEMENT DATA: RAYTHEON PART No.	IRC PART No.	NOTES
R53	470KΩ	½	9B1-94	BTS-470K	
R54	120Ω	1	9B2-51	BTA-120	
R55	2200Ω	5	9C12-1103	1 3/4A-2250	
R56	10 Meg	½	9B1-110	BTS-10 Meg	
R57	10 Meg	½	9B1-110	BTS-10 Meg	
R58	1 Meg	½	9B1-98	BTS-1 Meg	
R59	47KΩ	½	9B1-82	BTS-47K	
R60	470KΩ	½	9B1-94	BTS-470K	
R61	1 Meg	½	9B1-98	BTS-1 Meg	
R62	22KΩ	5		1 3/4A-22K	Note 4
R63	220KΩ	½	9B1-90	BTS-220K	
R64	12KΩ	½	9B1-75	BTS-12K	
R65	33KΩ	½	9B1-80	BTS-33K	
R66	47KΩ	½	9B1-82	BTS-47K	
R67	330KΩ	½	9B1-92	BTS-330K	
R68	82000	½	9B1-73	BTS-8200	
R69	12KΩ	½	9B1-75	BTS 12K	
R70	220KΩ	½	9B1-90	BTS-220K	
R71	220KΩ	½	9B1-90	BTS-220K	
R72	220KΩ	½	9B1-90	BTS-220K	Note 2
R73	1 Meg	½	9B1-98	BTS-1 Meg	
R74	150KΩ	½	9B1-88	BTS-150K	
R75	150KΩ	½	9B1-88	BTS-150K	
R76	2.2Meg	½	9B1-102	BTS-2.2Meg	
R77	2.2Meg	½	9B1-102	BTS-2.2Meg	
R78	150KΩ	½	9B1-88	BTS-150K	
R79	680KΩ	½	9B1096	BTS-680K	
R80	680KΩ	½	9B1-96	BTS-680K	
R81	820KΩ	½	9B1-97	BTS-820K	
R82	56KΩ	½	9B1-83	BTS 56K	
R83	820Ω	1	9D2-61	BTA-820	
R84	5600Ω	1	9B2-71	BTA-5600	
R85	150KΩ	½	9B1-88	BTS-150K	
R86	100KΩ	½	9B1-86	BTS-100K	
R87	470KΩ	½	9B1-94	BTS-470K	
R88	100Ω	½	9B1-50		
R89	8200Ω	2	9B4-73	BTB-8200	
R90	2.2Ω	½	9C1-1087		
R91	160Ω	20			Note 5
R92	15000	10	9M20736	1 3/4A-1500	
R93	470KΩ	½	9B1-94	BTS-470K	
R94	5.6Ω		46M-20681		Note 6

Note 1. Not used in chassis no. 17T1
Note 2. Not used in all models.
Note 3. Some models use a 2200Ω (2 Watt) resistor in this application.
Note 4. Some models use a 27KΩ (1 Watt) resistor in this application.
Note 5. Some models use a 175Ω (20 Watt) resistor in this application.
Note 6. Used as a fuse.
Note 7. Some models a 1000Ω resistor in this application

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: RAYTHEON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC	6 3VAC @ .44A			12D21160			FO-86 ↓	F-18X ↓

↓ Drill one new mtg. hole

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: RAYTHEON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	200Ω	1100Ω	B12M-18241	A-8125	A-3000 ②	TBO-1	A-97X	Vert Osc Trans
			B12M-18241-3 ①					
T3	215.5Ω	5Ω Tap ③ 2.5Ω	C20I-21025					Horiz. Output Trans.
	15.5Ω	SEC 2 0Ω						
	25.5Ω							
T4	10770		B12C20761-1	A-8141	A-3039	TBO-12	A-104X	Vert. Output Trans.
	Tap ④ 70							
T5A	12Ω		C20I-21130	DY-8 ⑤	MDF-70 ⑥	TY-2 ⑦	U-12 ⑧	Horiz. Deflection Coils Vert. Deflection Coils
B	85Ω		C20I-21514 ⑦					

① Alternate vert osc trans.
② Drill one new mtg. hole.
③ Used on 21-inch receivers.
④ Use original deflection network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RAYTHEON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	2.3KΩ	3.15Ω	176Ω	55Ω	12L21215	A-3876	A-2928	RO-2	S-1X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: RAYTHEON PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3.15Ω	18A 21216 18A-21442 ①	ST 105 (Mod P5-30)	5A07	↓ 10 PM Speaker

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D C RESISTANCE	RATINGS: INDUCTANCE 10 CURRENT 1000 Cycle	REPLACEMENT DATA: RAYTHEON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.270A	78Ω	2.92HY	16A21214	A-2926	2991 ↓	TR-3300 ↓	C-17X

↓ Drill one new mtg. hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: RAYTHEON PART No.	MERIT PART No.	IRC PART No.	NOTES
L2	Ant. Trans.	0Ω	0Ω	13E-20189			Low Band
L3	Ant. Trans.	0Ω	0Ω	13E-20767			High Band
L4	Fil. Choke	.1Ω		16A-17937			
L5	Neutralizing Coil	0Ω		13M-20781			
L6	Cathode Choke	0Ω		13M-20780			
L7	RF Choke	0Ω		16A-11126			
L8	RF Coil	0Ω	0Ω	13E-17140			High Band
L9	RF Coil	0Ω	0Ω	13E-12046			Low Band
L10	Mixer Grid Coil	0Ω	0Ω	13E-17140			High Band
L11	Mixer Grid Coil	0Ω	0Ω	13E-12046			Low Band
L12	Fil. Choke	0Ω		16A-20777			
L13	Osc. Coil	0Ω	0Ω	13E-17140			High Band
L14	Osc. Coil	0Ω	0Ω	13D-12155			Low Band
L15	Cathode Choke	2Ω		20I-15608			
L16	RF Choke	0Ω		16A-21856			
L17	RF Choke	2Ω		20I-15608			
L18	1st. Video IF	.1Ω		20I-20782		1V-102	
L19	Fil. Choke	.1Ω		16A-17937			
L20	2nd. Video IF	.1Ω		20I-21111			Includes 47MMF capacitor
L21	RF Choke	1.8Ω		16A-18676		CLA	2.2 Microhenries
L22	Fil. Choke	.1Ω		16A-17937			
L23	3rd. Video IF	.1Ω		20I-21494			Includes 10KΩ resistor, 470 & 47MMF capacitors
L24	Grid Choke	2Ω		20I-15608			
L25	RF Choke	1.8Ω		16A-18676		CLA	2.2 Microhenries
L26	RF Choke	2.1		20I-15608			
L27	Series Peaking Coil	2.6Ω		20I-20265	TV-180		38 Microhenries
L28	Series Peaking Coil	7.5Ω		16A-20970	TV-185		270 Microhenries
L29	Shunt Peaking Coil	8.5Ω		16A-21391			305 Microhenries
L30	Shunt Peaking Coil	7.5Ω		16A-20970	TV-185		270 Microhenries
L31	Sound IF	1.4Ω		20I-21398	TV-151		Tertiary Winding 25Ω
L32	Ratio Det	4.2Ω	.7Ω	19M-21644*	TV-115 †		
L33	Horiz. Osc.	85Ω		20. 20239.	TV-163 ▲		Not used in all Models.
L34	Cathode Choke	2Ω		20I-15609			
L35	RF Choke	2Ω		20I-15608			

■ Enlarge mounting hole.
▲ Drill new mounting hole
* Alternate part #13M-19643
† Use adaptor plate

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

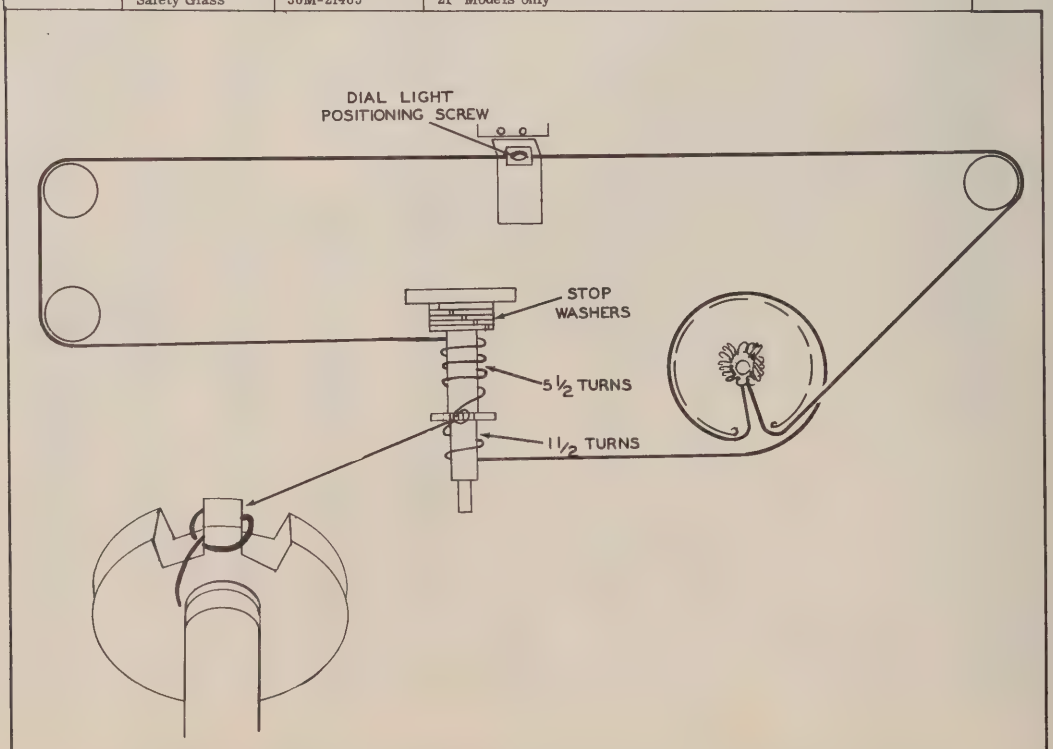
ITEM No.	RATING CURRENT	REPLACEMENT DATA RAYTHEON PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	NOTES
M1	.270A	21J20097	NH5	6Q4	1090	6S300	
M2	.270A	21J20097	NH5	6Q4	1090	6S300	

DIAL LIGHTS

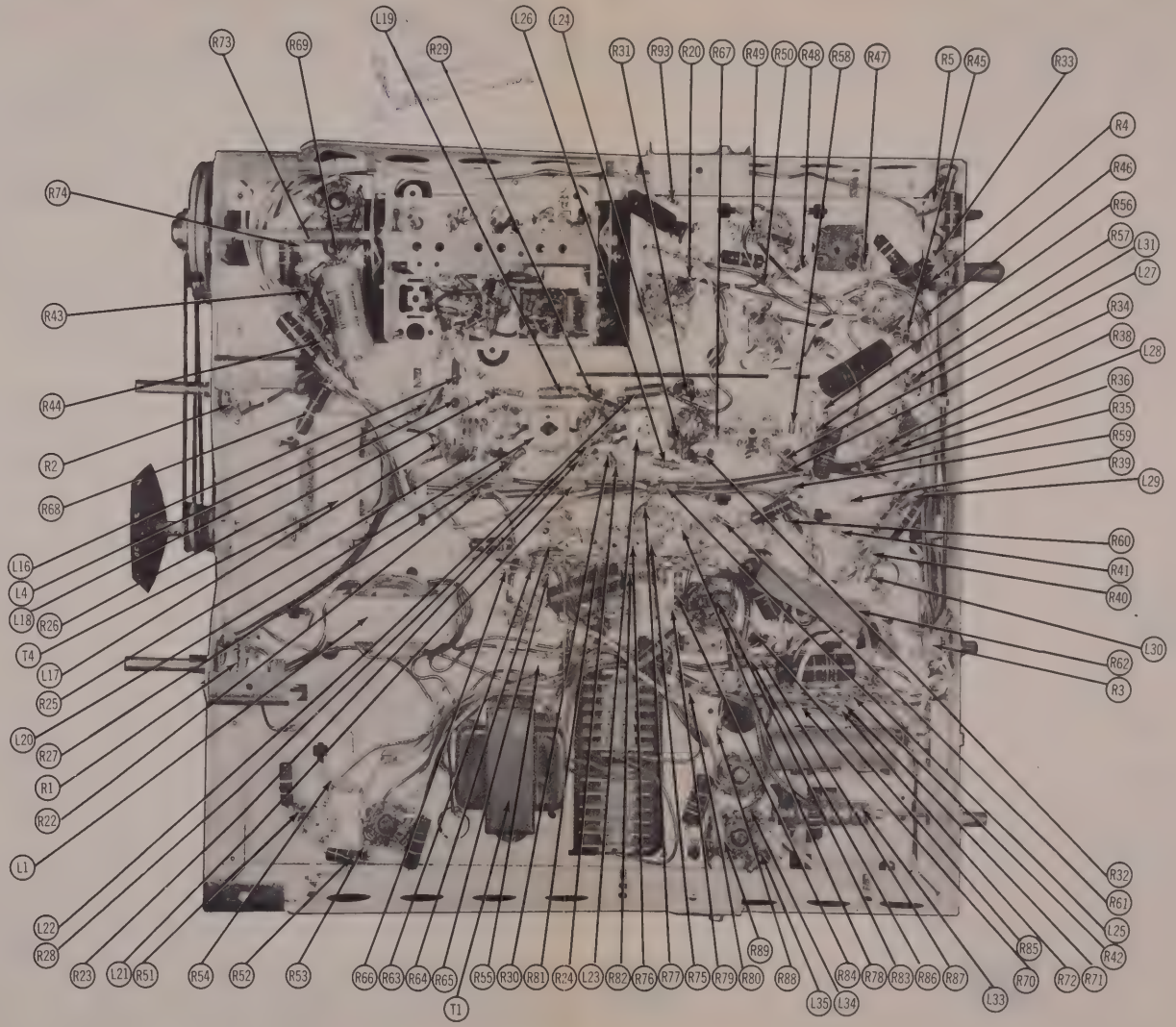
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RAYTHEON PART No.		NOTES
M3	Bayonet	6-8	.15	Brown	46A-10793		Type #47 } Used in 21"
M4	Bayonet	6-8	.15	Brown	46A-10793		Type #47 } Models only

MISCELLANEOUS

ITEM No.	PART NAME	RAYTHEON PART No.	NOTES
M5	Antenna Trans. Assy.	201-21192	
M6	RF Tuner		
M7	4th. Video IF Crystal		CK-706 } Video Detector Assembly
	Capacitor	8G-12166	5MMF 500V. } Part #13B-21167
	Peaking Coil	201-15608	
M8	Switch	20B-21506	Area Selector (Fringe - Suburban - Local)
M9	Centering Magnet	16M-20697	
M10	Ion Trap	16M-19906	
M11	Magnet	16M-21526	Horiz. Linearity (17" Models only)
M12	Magnet	16M-21499	Anti-Pin Cushion Correction (21" Models only)
	Knob	5B-21135-76	Tuning (Models M-1733A & C-1735A)
	Knob	5B-21135-56	Tuning (Model C-1736A)
	Knob	5B-21205-76	Off/on Volume (Models M-1733A & C-1735A)
	Knob	5B-21205-56	Off/on Volume (Model C-1736A)
	Knob	5B-21206-76	Contrast (Models M-1733A & C-1735A)
	Knob	5B-21206-56	Contrast (Model C-1736A)
	Knob	5B-21134-76	Brightness (Models M-1733A & C-1735A)
	Knob	5B-21134-56	Brightness (Model C-1736A)
	Knob	5B-21241-A103	Tuning (Model M-2107A)
	Knob	5B-21241-76	Tuning (Model C-2108A)
	Knob	5B-21241-56	Tuning (Model C-2110A)
	Knob	5B-21241-A104	Tuning (Model C-2111A)
	Knob	5B-21240-A103	Off/on Volume (Model M-2107A)
	Knob	5B-21240-76	Off /on Volume (Model C-2108A)
	Knob	5B-21240-56	Off/on Volume (Model C-2110A)
	Knob	5B-21240-A104	Off/on Volume (Model C-2111A)
	Knob	5B-21276-29	Star (3 Used) Models M-2107A, C-2108A, C-2110A, C-2111A
	Tuning Dial	5M-21147-85	Models M-1733A & C-1735A
	Tuning Dial	5M-21147-56	Model C-1736A
	Cabinet Back Assy	200-21438	Complete (Cabinet Back, shield, line cord) 17" Models only
	Cabinet Back Assy	200-21477	Complete (Cabinet Back, shield, line cord) 21" Models only
	Mask	25M-21482-4101	Models M-1733A & C-1736A
	Mask	25M-21482-4102	Model C-1735A
	Mask	25M-21508-A102	Models C-2108A & C-2110A
	Mask	25M-21508-A103	Model M-2107A
	Mask	25M-21508-A104	Model C-2111A
	Safety Glass	30M-20725	17" Models only
	Safety Glass	30M-21485	21" Models only



DRIVE CORD STRINGING FOR 21" MODELS



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TRUETONE
MODEL D1234A, B

PROPERTY OF
L F BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TRUETONE
MODEL D1234A, B

TRUETONE
MODEL D1234A, B

TRADE NAME	Truetone Models D1234A, B		
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.		
TYPE SET	AC Operated AM-FM-Phono Combination Superheterodyne Receiver		
TUBES (EIGHT)	Types 12AT7 FM RF Amp.-FM Mixer, 6BE6 FM Osc.-AM Conv., 6BA6 1st. FM-AM IF Amp., 6BA6 2nd. FM IF Amp., 6AL5 Ratio Det., 6AV6 AM Det.-AVC-AF Amp., 6V6GT Audio Output, 5Y3GT Rectifier		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	.37 Amp. @ 117 Volts AC
TUNING RANGE- BROADCAST	540-1620 KC	FREQ. MOD.	88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE V-M MODEL 950, PHOTOFACT SET #107, FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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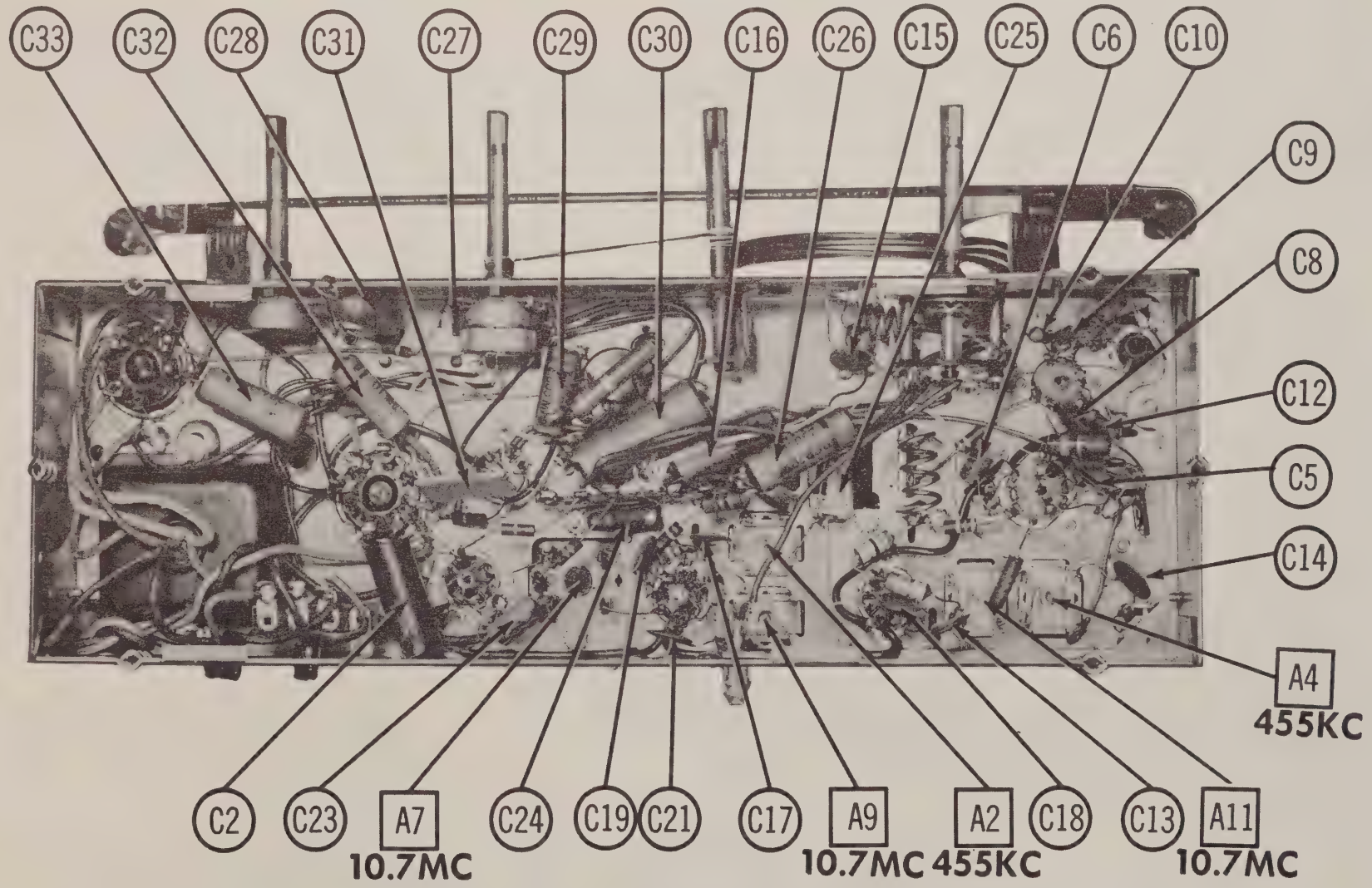
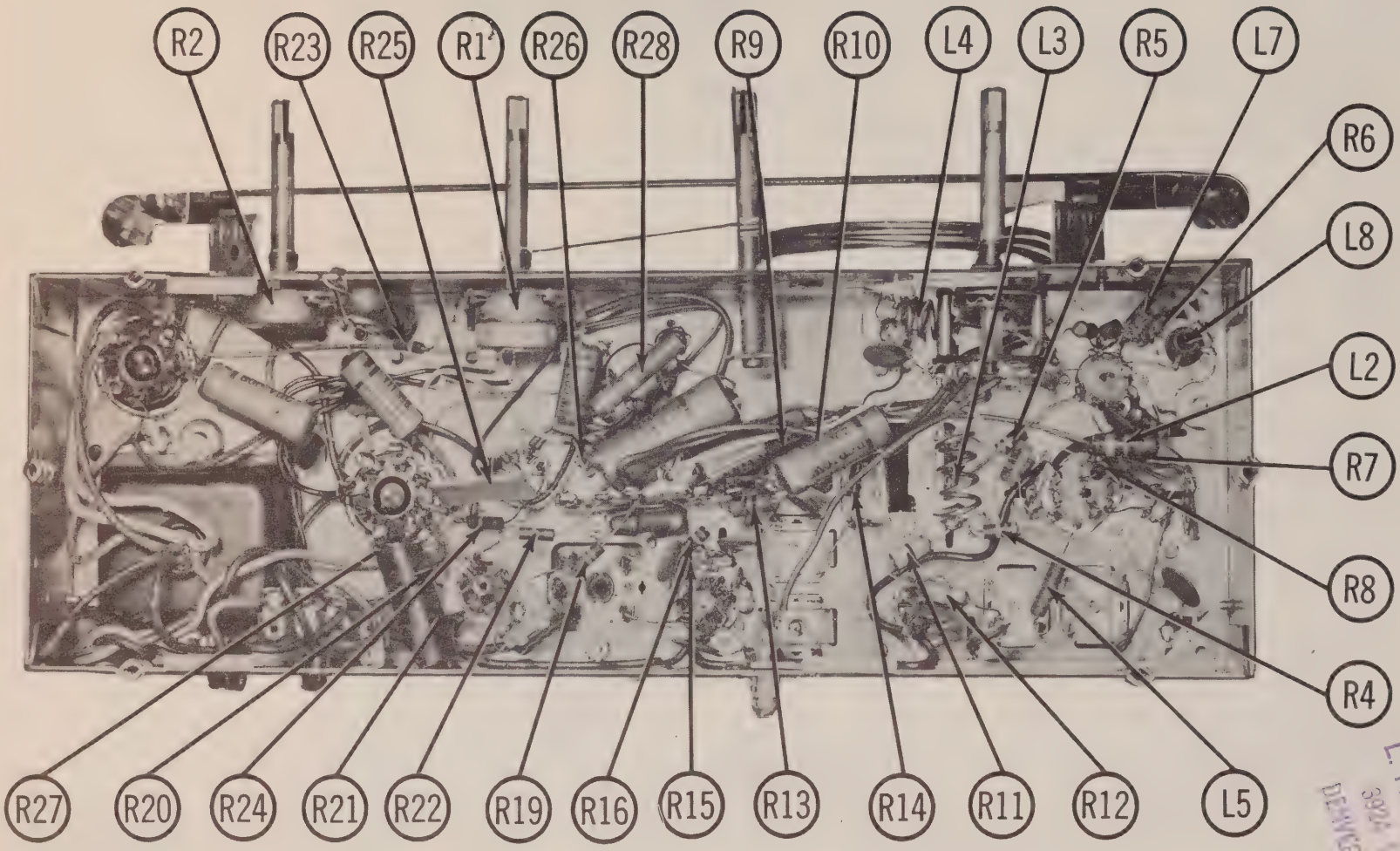
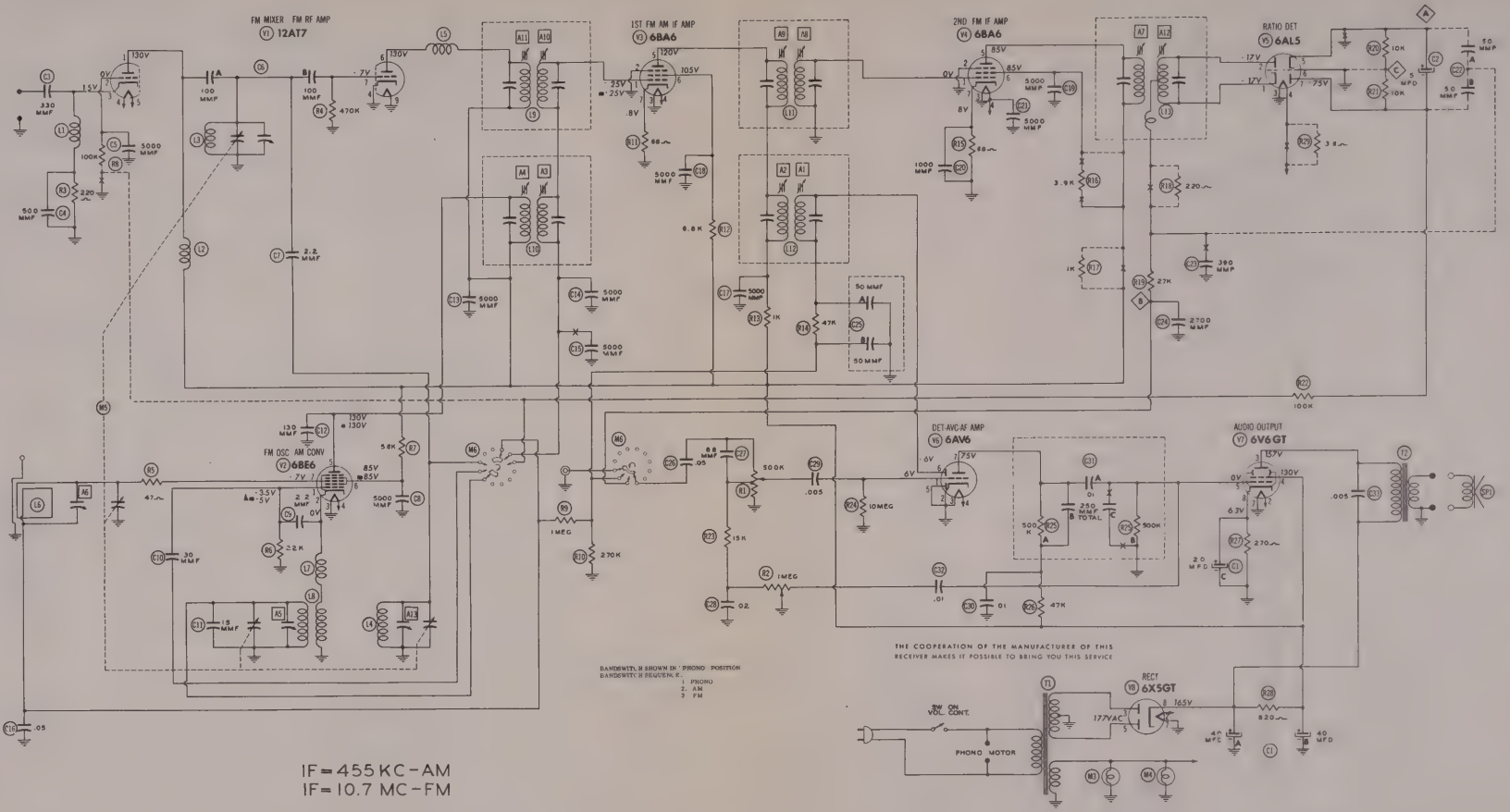


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKE
3924 SIGUE
DENVER, COLORADO



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	18000Ω	100KΩ	330Ω	0Ω	0Ω	†880Ω	470KΩ	0Ω	1Ω
V 2	6BE6	22KΩ	2.1Ω	0Ω	.1Ω	†820Ω	16.6KΩ	1.3Meg		
V 3	6BA6	35K Ω at 3Meg	0Ω	2Ω	.1Ω	11.8KΩ	13.8KΩ	680Ω		
V 4	6BA6	.1Ω	0Ω	0Ω	.1Ω	14.7KΩ	14.7KΩ	680Ω		
V 5	6AL5	INF.	INF.	.0Ω	.1Ω	.0Ω	0Ω	20KΩ		
V 6	6AV6	10 Meg	0Ω	0Ω	.1Ω	0Ω	310KΩ	†350KΩ		
V 7	6V6GT	INF.	.1Ω	†420Ω	†830Ω	500KΩ	.78Ω	0Ω	370Ω	
V 8	6X5GT	INF.	0Ω	195Ω	INF.	195Ω	INF.	.1Ω	190KΩ	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHER WISE NOTED.
† MEASURED FROM PIN 8 OF V8
▲ TAKEN WITH VACUUM TUBE VOLTMETER
■ MEASURED IN "AM" POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455 KC (400∿ Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620 KC	"	"	"	A5	"
3.	50MMF	High side to external antenna terminal. Low side to chassis.	1400 KC	"	Tune to 1400 KC signal	"	A6	Adjust for maximum output. If pointer is not at 1400 KC on dial reset to that point.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to pin 1 (grid) of 6BA6 (V3). Low side to chassis.	10.7 MC (Unmod)	FM	Tuning gang fully open.	DC probe to point Ⓐ. Common to chassis.	A7, A8, A9	Adjust for maximum deflection.
5.	"	High side to stator plates of rear FM section of tuning gang. Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
4.	.001MFD	High side to pin 1 (grid) of 6BA6 (V3). Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully open	Vert. amp. to point Ⓐ. Low side to chassis.	A7, A8 A9	Disconnect stabilizer capacitor C2. Adjust for curve of maximum amplitude and symmetry as in fig. 1
5.	"	High side to stator plates of rear FM section of tuning gang. Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A12	Reconnect capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines as in fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	270Ω Carbon Resistor	High side thru 270Ω to ungrounded FM antenna terminal. Low side to chassis.	108.5MC (Unmod)	FM	Tuning gang fully open.	DC probe to point Ⓐ. Common to chassis.	A13	Adjust for maximum deflection.
8.	"	"	104.5MC	"	Tune for maximum deflection on VTVM.	"	A14	"

FIG. 1

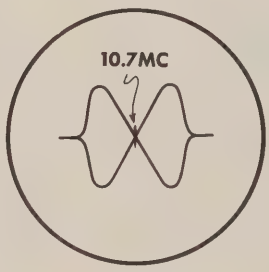


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	FM RF Amp.-FM Mixer	12AT7	12AT7	9A	
V2	FM Oscillator-AM Converter	6BE6	6BE6	7CH	
V3	1st. FM AM IF Amp	6BA6	6BA6	7BK	
V4	2nd. FM IF Amp.	6BA6	6BA6	7BK	
V5	Ratio Detector	6AL5	6AL5	6BT	
V6	Det.-AVC-AF Amp	6AV6	6AV6	7BT	
V7	Audio Output	6V6GT	6V6GT	7S	
V8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

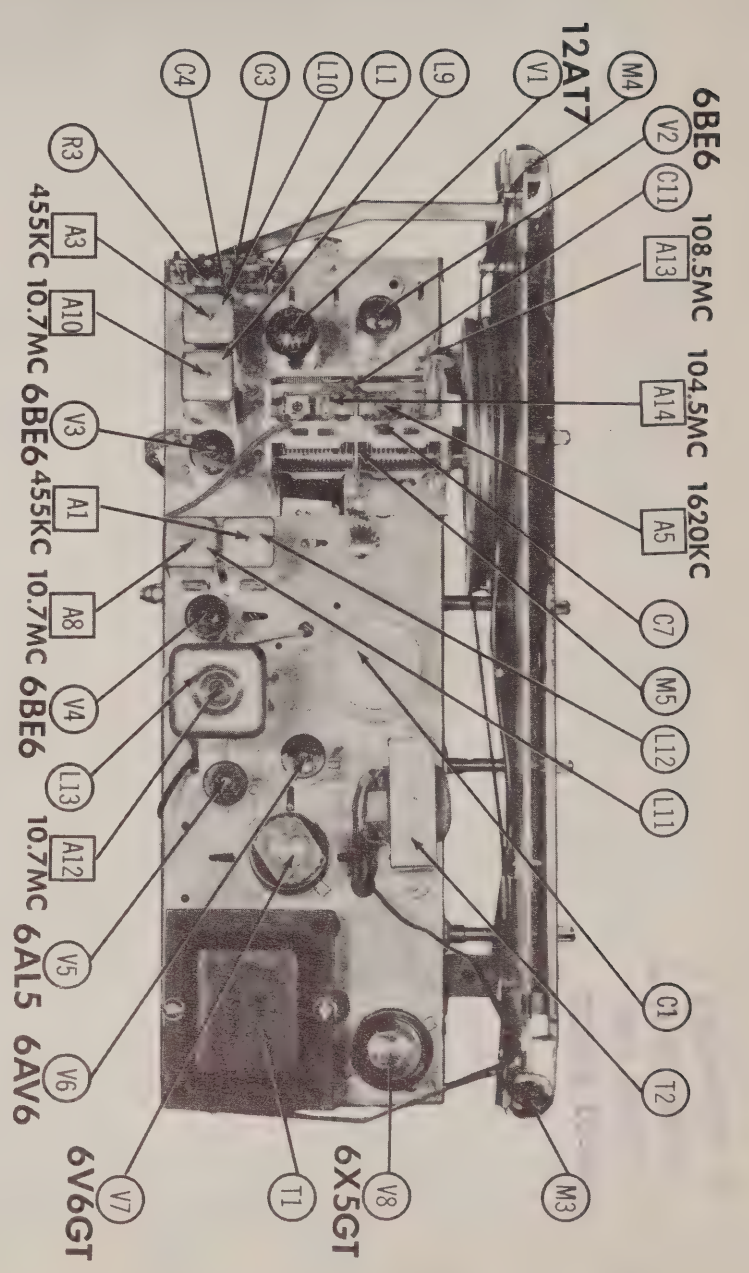
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	200	45X360	AFH3-100		C107		FP346	TVL-3813	
B	■40	150								
C	▲20	25								
C2	5	100	45X361	PRS150/4		BR415		TC40	TVA-1402	
C3	330	500	47X470		D6-331		GP2K-331	UC-5333	5GA-T33	
C4	500		47X508	SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C5	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C6A	100		76X4	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
B	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C7	2.2		47X557		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C8	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C9	2.2		47X557		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C10	30		47X558		TCN-30		N750K-300			
C11	15		47X552		TCN-15		N750K-150		5TCU-Q15	
C12	130		47X559		TCN-130		N750L-131			
C13	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C14	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C15	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	Note 1
C16	.05	200	B66503	P288-05	DF-503	PJ2S5		PT415	2TM-P5	
C17	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C18	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C19	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C20	1000		47X519	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	Note 1
C21	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C22A	50		76X9	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	Note 2
B	50			SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	Note 2
C23	390	500		1468-0004	D6-391	5W5T4	GP2K-391	MC243	1FM-34	Note 2
C24	2700		47X492	SI2700	D6-272		GP2-333-272	UC-5227	5GA-D27	
C25A	50		47X112	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
B	50			SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C26	.05	200	B66503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C27	68	500	47X471	1468-00007	D6-680	5W5Q7	GP1K-680	UC-5468	MS-47	
C28	.02	200	B66203	P288-02	DF-203	PJ2S2		PT412	2TM-S2	
C29	.005	400	D66502	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C30	.1	400	D66104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C31A	.01									
B	250		♦76X5		♦PC-80		♦1404-01		♦102C1	
C										
C32	.01	200	B66103	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C33	.005	800		P1088-005		PTE16D5		PT1625	MB-D5	Note 3

Note 1. Not used in all Models.
Note 2. C23 replaces C22 in some Models.
Note 3. Some Models use .001MFD in this application (Part #H66102)
♦ Items C31A, C31B, C31C, R25A, R25B are combined in one unit. When replacing items separately C31B and C31C should total 250MMF.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	36X372B	Q13-133X	AT-78	BTSK-66-S	UT-430	Volume Tap @ 125KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R1A
R2A	1 Meg	½	40X341A	Q11-137	AG-61-S	AB-69	U-54	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R3	220Ω	1/2	B84221	BTS-220	
R4	470KΩ	1/2	B85474	BTS-470K	
R5	47Ω	1/2	B85470		
R6	22KΩ	1/2	B85223	BTS-22K	
R7	5600Ω	1/2	B85562	BTS-5600	
R8	100KΩ	1/2	B85104	BTS-100K	
R9	1 Meg	1/2	B85105	BTS-1 Meg	
R10	270KΩ	1/2	B84274	BTS-270K	
R11	68Ω	1/2	B84680		
R12	6800Ω	1/2	B84682	BTS-6800	
R13	1000Ω	1/2	B85102	BTS-1000	
R14	47KΩ	1/2	B85473	BTS-47K	
R15	68Ω	1/2	B84680		
R16	3900Ω	1/2		BTS-3900	Note 1
R17	1000Ω	1/2	B85102	BTS-1000	Note 1
R18	220Ω	1/2	B84221	BTS-220	
R19	27KΩ	1/2	B85273	BTS-27K	
R20	10KΩ	1/2		BTS-10K	Note 2
R21	10KΩ	1/2		BTS-10K	Note 2
R22	100KΩ	1/2	B85104	BTS-100K	
R23	15KΩ	1/2	B85153	BTS-15K	
R24	10 Meg	1/2	B85106	BTS-10 Meg	
R25A	500KΩ	1/2	♦76X5		
B	500KΩ	1/2			
R26	47KΩ	1/2	B85473	BTS-47K	
R27	270Ω	1/2	B84271	BTS-270	
R28	820Ω	2	D84821	BTB-820	
R29	3.6Ω	1/2	43X233		Note 1

♦ Items R25A, R25B, C31A, C31B, C31C are combined in one unit.
Note 1. Not used in all models.
Note 2. Some models use a 6800Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .37A	354VCT .070ADC	6.3VAC @ 3.2A		53X322				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	6.8KΩ	3.4Ω	420Ω	.78Ω	51X134	A-3878①	A-2931 ①	RO-13 ①	S-7X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA TRUETONE PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	8"	PM	3.8Ω	12A505	10J11	10A31	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	MERIT PART No.	IRC PART No.	NOTES
L1	FM Ant. Coil	.22Ω		35A9		CLA	.47 Microhenry
L2	FM RF Choke	3Ω		35A8		CLA	3.3 Microhenries
L3	FM RF Coil	0Ω		9A2066			
L4	FM Osc. Coil	0Ω		9A2067			
L5	Parasitic Supp.	0Ω		9A2103			
L6	Loop Ant.	.1Ω	1.2Ω	9A2099			
L7	Cathode Choke	1.8Ω		35A5		CLA	2.2 Microhenries
L8	AM Osc. Coil	.3Ω	5Ω	9A2065			
L9	1st. FM IF	1Ω	1Ω	9A2060	FM-254		
L10	1st. AM IF	12Ω	13.5Ω	9A2062	BC-352		
L11	2nd. FM IF	1Ω	1Ω	9A2061	FM-254		
L12	2nd. AM IF	13.5Ω	15Ω	9A2063	BC-353		
L13	Ratio Det.	2.2Ω	.1Ω CT	9A2161	FM-255 *		Tertiary Winding - .25Ω

* Use adaptor plate.

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA TRUETONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1	AC-AG-J	AG-AG-J	A-AG	W26B	A66U	33	0-2 or S-2	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

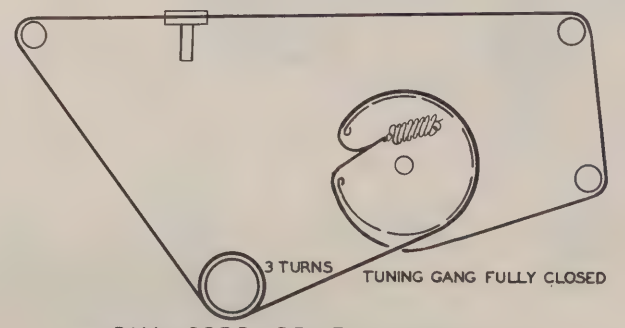
ITEM No.	REPLACEMENT DATA TRUETONE PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M2	A-AG-J	W-5AGA or W-5AGS	A-752 or A-852	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA TRUETONE PART No.		NOTES
M3	Bayonet	6-8	.15	Brown	7A103		Type #47
M4	Bayonet	6-8	.15	Brown	7A103		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M5	Tuning Capacitor	14A209	17-507MMF, 14-187MMF
M6	Switch	2A393	Phono-AM-FM Selector
A6	Trimmer Capacitor	17A256	2-24MMF Antenna Trimmer
	Cabinet	254	
	Knob	10A759	4 Used
	Dial Glass	58X733	
	Pointer	15X260	
	Dial Bracket	25X1616	
	Drive Shaft	26X486	
	Drive Cord Assy.	10X38	
	Escutcheon	4X1162	



DIAL CORD DRIVE

TRUETONE
MODEL D3265A

TRUETONE
MODEL D3265A

TRADE NAME	Truetone Model D3265A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (Five)	Types 1U4 RF Amp., 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	110-120 Volts AC/DC (or) 9 Volts DC "A" Supply & 90 Volts DC "B" Supply In Pack Form
RATING	.14 Amp. @ 117 Volts AC (or) 65MA @ 9 Volts DC & 18MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1610 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V2). Low side to B-.	455 KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	High side to stator plates of antenna section of tuning gang. Low side to B-.	1610 KC	"	"	A5	"
3.	"	"	1400 KC	Tune to 1400KC signal	"	A6	"
4.		Loop	1400 KC	"	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D3265A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifer	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amplifier	1U4	1U4	6AR	
V4	Det-AVC-AF Amp.	1U5	1U5	6BW	
V5	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	150	18-296	AFH4-33		UP4415-C010			R1055	
B	■30	150								
C	▲200	25								
C2	.05	200	16-152	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	10	500	15-186	1468-00001	D6-100	5W5Q1	GP1K-100	MC215	1FM-41	
C4	10000		15-211	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C5	5000		16-177	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C6	.05	200	16-152	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C7	.05	200	16-152	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C8A	200			SI200	D6-201	TM5T2	GP2K-201	UC-532		
B	.002			BPD-002	DD-202	TM5D2	801-002	DD-522		
C	100		17-103	SI100	D6-101	TM5T1	GP1K-101	UC-531	34C4	
D	.005			BPD-005	DD-502	TM5D5	811-005	DD-525		
E	.005			BPD-005	DD-502	TM5D5	811-005	DD-525		
C9	.002	600	16-198	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C10	.05	400	16-179	P488-05		PTE4S5		PT415	4TM-S5	
C11	.05	400	16-179	P488-05		PTE4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	24-201	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

RESISTORS

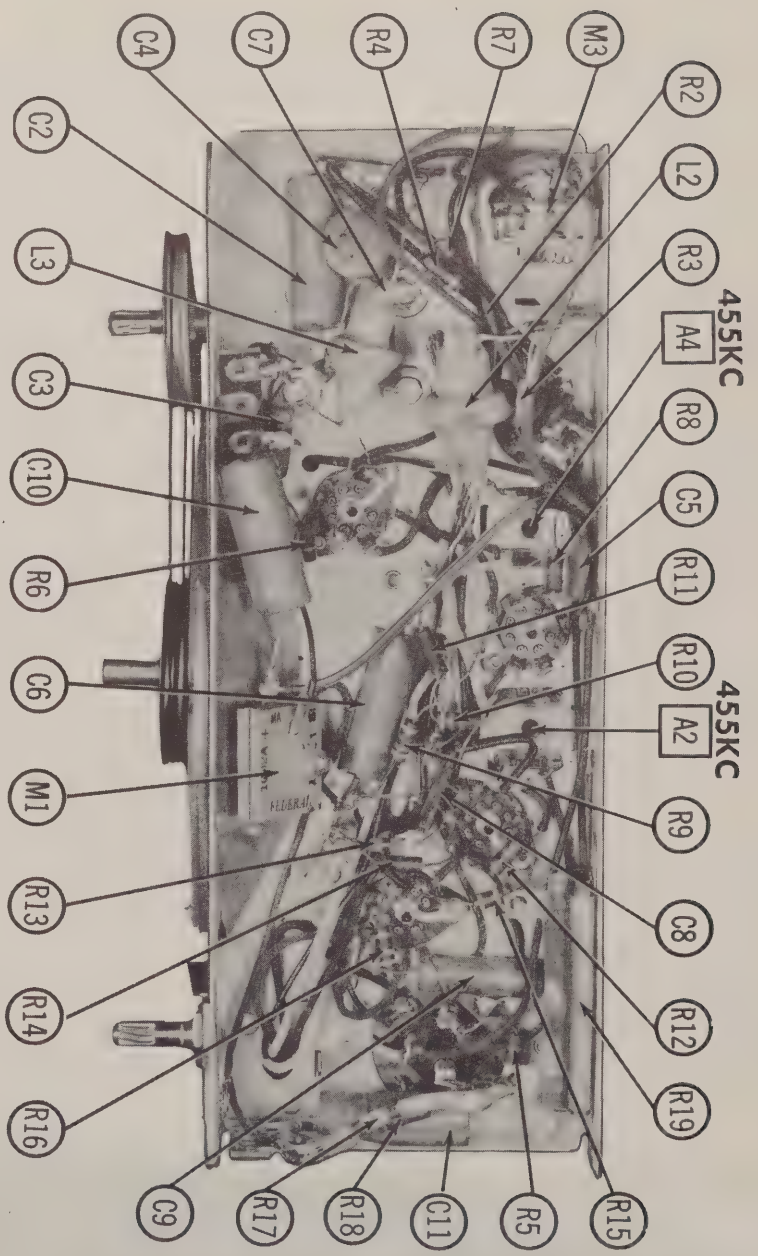
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R2	4.7Meg	½	60-779	BTS-4.7Meg	
R3	22KΩ	½	60-744	BTS-22K	
R4	1500Ω	½	60-729	BTS-1500	
R5	680Ω	½	60-708	BTS-680	
R6	100KΩ	½	60-727	BTS-100K	
R7	27KΩ	½	60-745	BTS-27K	
R8	10 Meg	½	60-728	BTS-10 Meg	
R9	470Ω	½	60-770	BTS-470	
R10	47KΩ	½	60-730	BTS-47K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R11	2.2Meg	½	60-726	BTS-2.2Meg	
R12	10 Meg	½	60-728	BTS-10 Meg	
R13	4.7Meg	½	60-779	BTS-4.7Meg	
R14	1 Meg	½	60-668	BTS-1 Meg	
R15	820KΩ	½	60-799	BTS-820K	
R16	330Ω	½	60-704	BTS-330	
R17	110Ω	3	60-796		
R18	1500Ω	½	60-729	BTS-1500	
R19	2000Ω	10	60-879	1 3/4A-2000	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	10KΩ	3Ω	370Ω	.51Ω	80-276	A-3879	A-2900	RO-16	S-1IX	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3Ω	79-405	ST-105 Mod. P5-X	5A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRUETONE PART No.	MERIT PART No.	
L1	Loop Ant.	.6Ω		82-74		
L2	RF Coil	11Ω	11Ω	10-535		Secondary tapped @ 3.8Ω
L3	Osc. Coil	6.5Ω	12Ω	10-553		
L4	Input IF	20Ω	20Ω	10-508	BC-352	
L5	Output IF	20Ω	20Ω	10-508	BC-353	

SELENIUM RECTIFIER

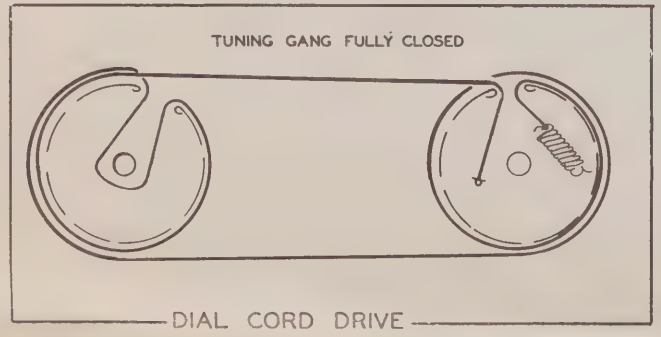
ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	TRUETONE PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	
M1	.070A	83-642	NA5	8J1	1002A	6S65	

BATTERIES

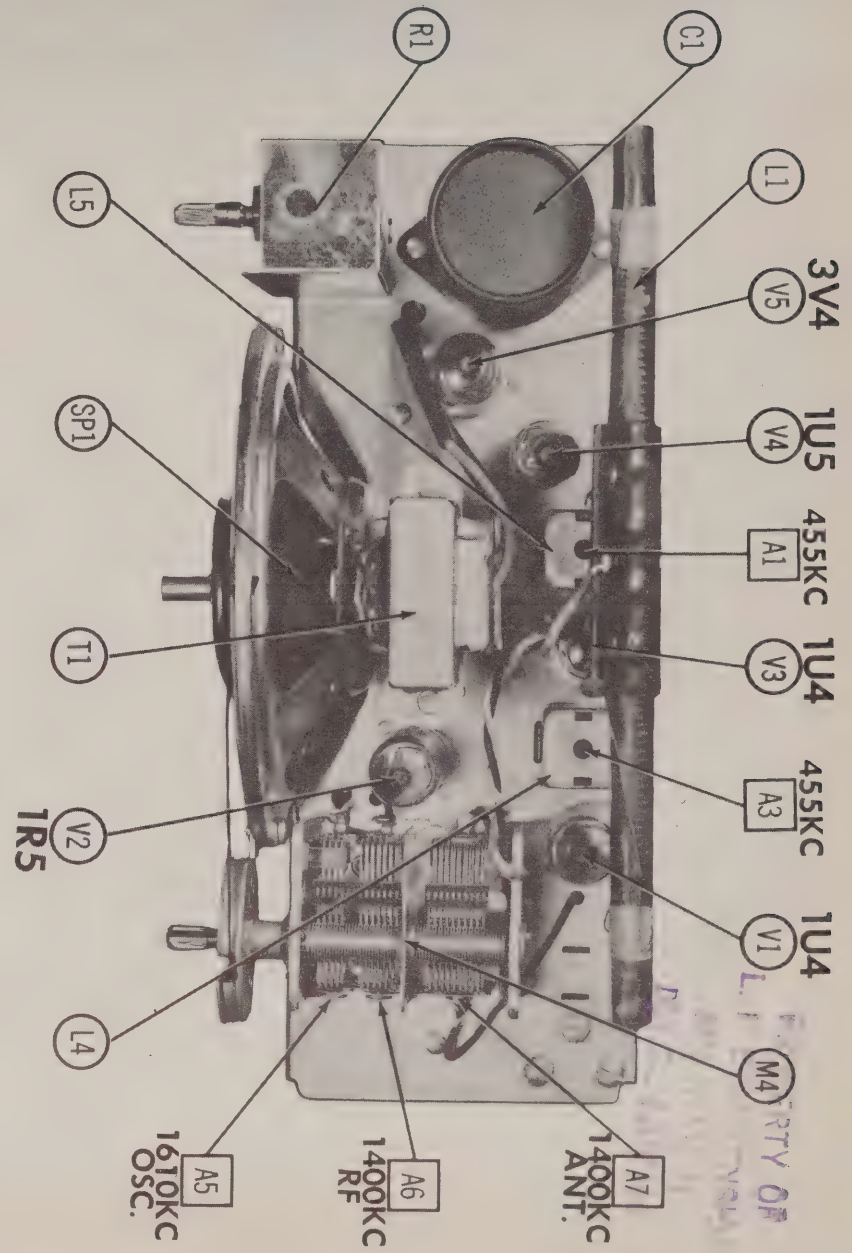
ITEM No.	VOLTAGE	TRUETONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V"A" 90V"B"	Wizard No. 3B6460			753			F6A60	

MISCELLANEOUS

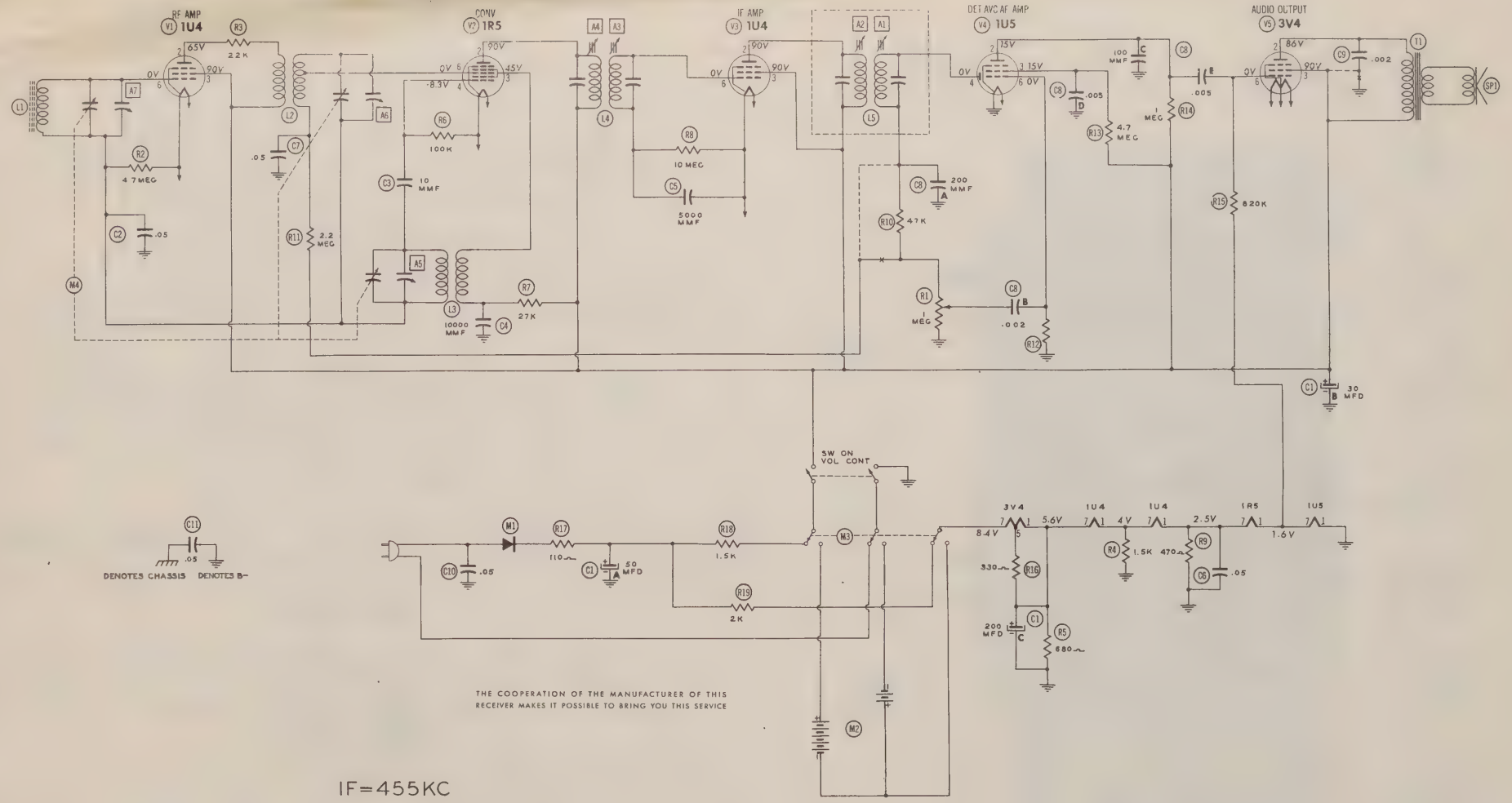
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Switch	69-186	Power Change-over
M4	Tuning Capacitor	19-219	30-415MMF, 4-311MMF, 6-180MMF (Drum included)
	Cabinet	42-536	Wood, Leatherette
	Escutcheon	40-219	Plastic
	Knob	52-363	2 Used
	Pointer	58-92	
	Battery Cable Assy	84-391	



CHASSIS—BOTTOM VIEW



TRUETONE MODEL D3265A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	†22KΩ	†1.6KΩ	INF	*	4.7Meg	*
V 2	1R5	*	†1.6KΩ	†28.5KΩ	100KΩ	*	3.2Meg	*
V 3	1U4	*	†1.6KΩ	†1.6KΩ	INF	*	10 Meg	*
V 4	1U5	*	†1 Meg	†4.7Meg	1.5Meg	10 Meg	10 Meg	*
V 5	3V4	*	†2KΩ	†1.6KΩ	INF	*	820KΩ	*

ALL MEASUREMENTS TAKEN WITH POWER SWITCH IN AC-DC POSITION
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM OUTPUT OF M1

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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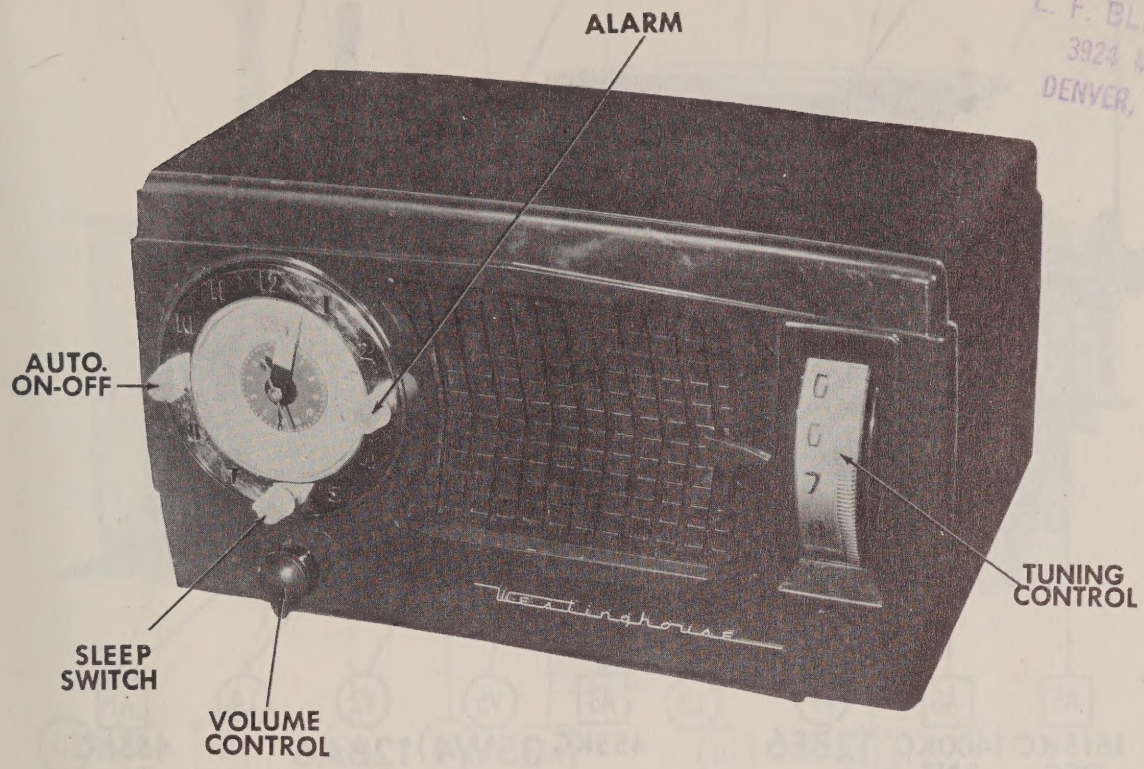
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L. F. BLANKENSH
3924 MEADE ST
DENVER, COLORADO

WESTINGHOUSE MODELS H-367T5 (Ch. V-2157-8), H-374T5, H-375T5 (Ch.V-2157-9)



WESTINGHOUSE MODELS H-367T5 (Ch. V-2157-8), H-374T5, H-375T5 (Ch.V-2157-9)

Westinghouse Model H-374T5

TRADE NAME	Westinghouse Models H-367T5 (Ch. V-2157-8), H-374T5, H-375T5 (Ch. V-2157-9)
MANUFACTURER	Westinghouse Elect. Corp., TV-Radio Div., Sunbury, Pa.
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycle
RATING	.26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1615 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to stator of antenna section of tuning gang. Low side to B-.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil	A1, A2 A3, A4	Adjust for maximum output.
2.	"	"	1615 KC	"	"	A5	"
3.	"	Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12VE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	V-9991							Red
B	50	150								Orange
C2	.05	200	RCP10W2503M	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3A	220									
B	.002									
C	.005		♦ V-10789-1		♦PC-150		♦1408-01		♦103C4	
D	250									
E										
C4	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C5	.047	400	V-10157-4473M	489ZGXY-05		PJ4S47		PT4147	4TM-S47	
C6	.05	400	RCP10W4503M	P488-05		PTE4S5		PT415	4TM-S5	

♦ Items C3A, C3B, C3C, C3D, C3E, R5A, R5B, R5C are combined in one unit.
When replacing items separately, C3D and C3E should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	V-9993-5	Q13-133	AG-60-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

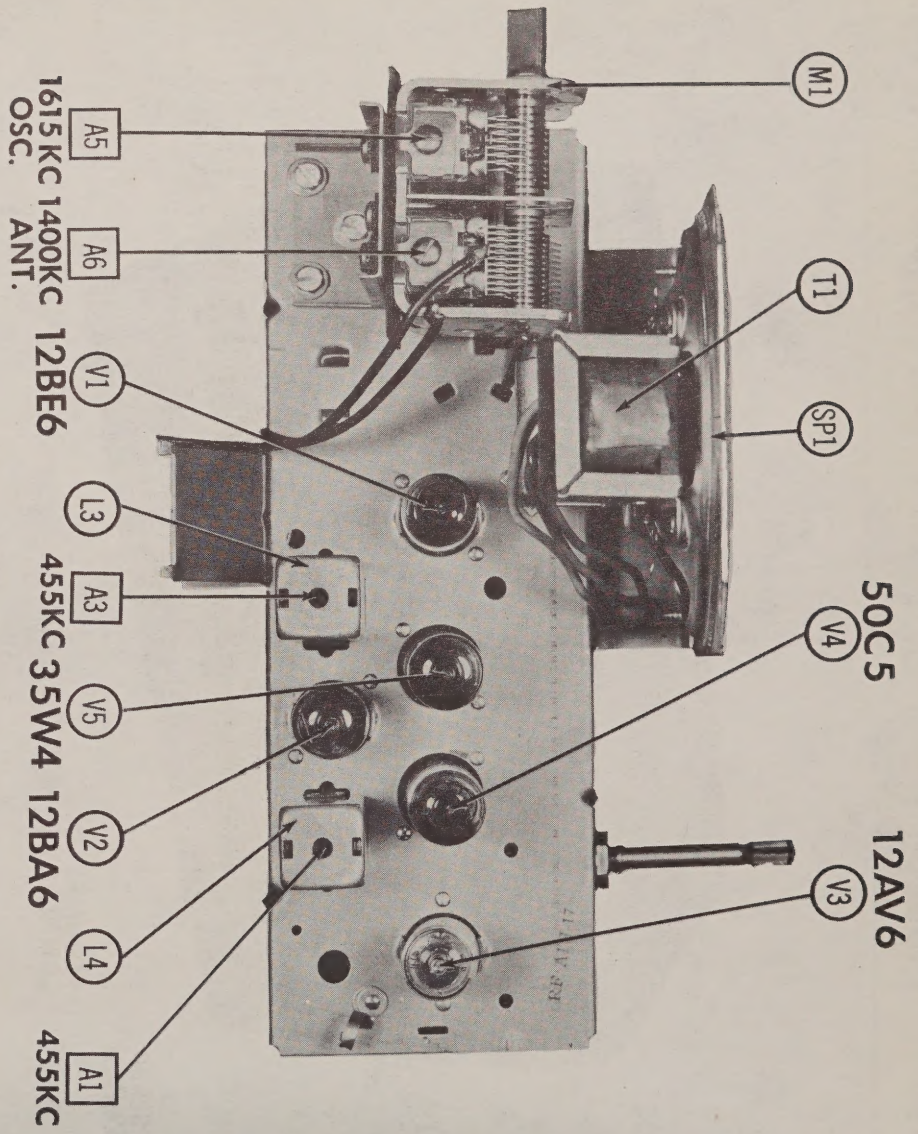
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½	RC20AE223M	BTS-22K	
R3	68Ω	½	RC20AE680M		
R4	3.3Meg	½	RC20AE335M	BTS-3.3Meg	
R5A	6.8Meg	½	♦V-10789-1	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-150	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R6	150Ω	½	RC20AE151M	BTS-150	
R7	1500Ω	1	RC30AE152M	BTA-1500	
R8	22Ω	1	RC30AE220M		

♦ Items R5A, R5B, R5C, C3A, C3B, C3C, C3D, C3E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.2KΩ Tap @ 13Ω	4.1Ω	172Ω Tap @ 8Ω	.8Ω	Part of Spkr.	A-3330 ①	A-3031	RO-3 ①		① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
SP 1	4"	PM	4.1Ω	V-10079-2	ST-113 Mod. P4-X	4A07	

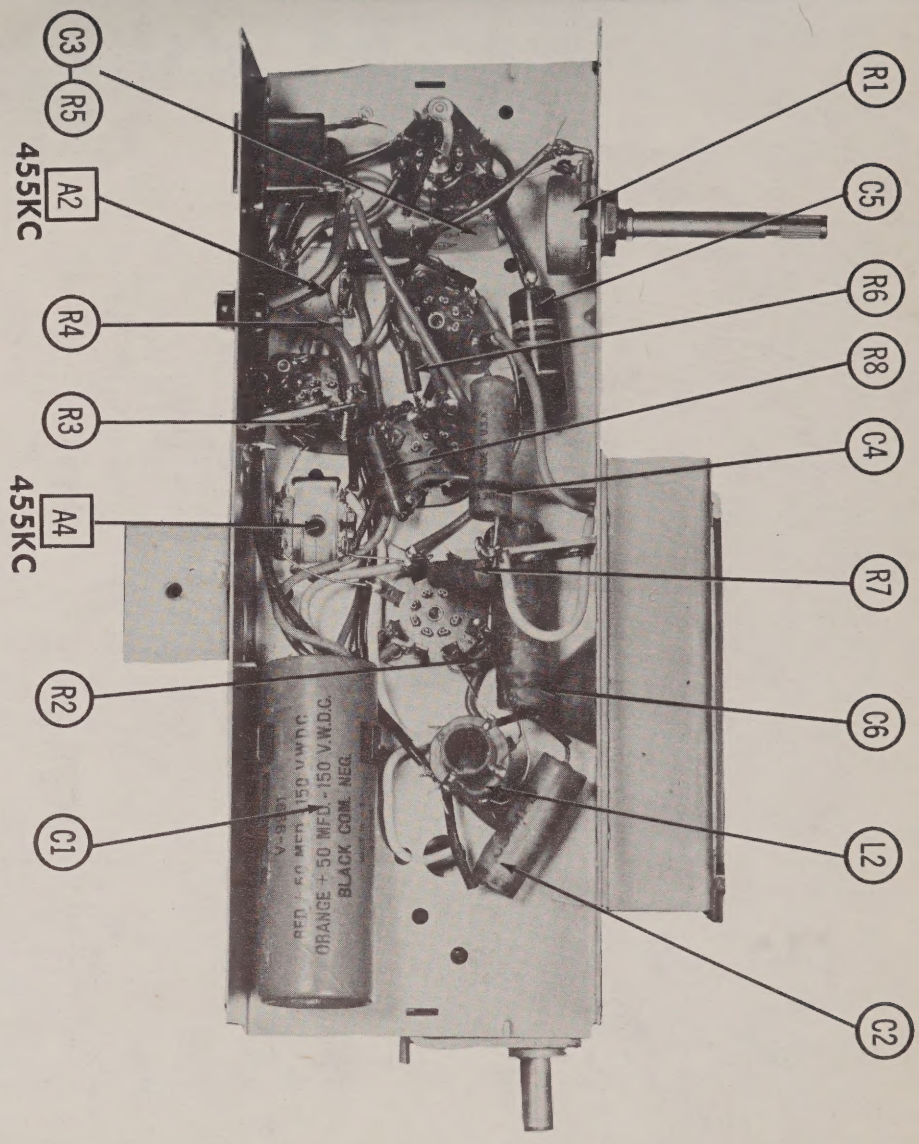
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Westinghouse PART No.	MERIT PART No.	
L1	Loop Ant.	3.2Ω		V-10785-1		
L2	Osc. Coil	1.1Ω	12.5Ω	V-9992		
L3	Input IF	17Ω	17Ω	V-10945-1	BC-352	
L4	Output IF	17Ω	17Ω	V-1945-1	BC-353	

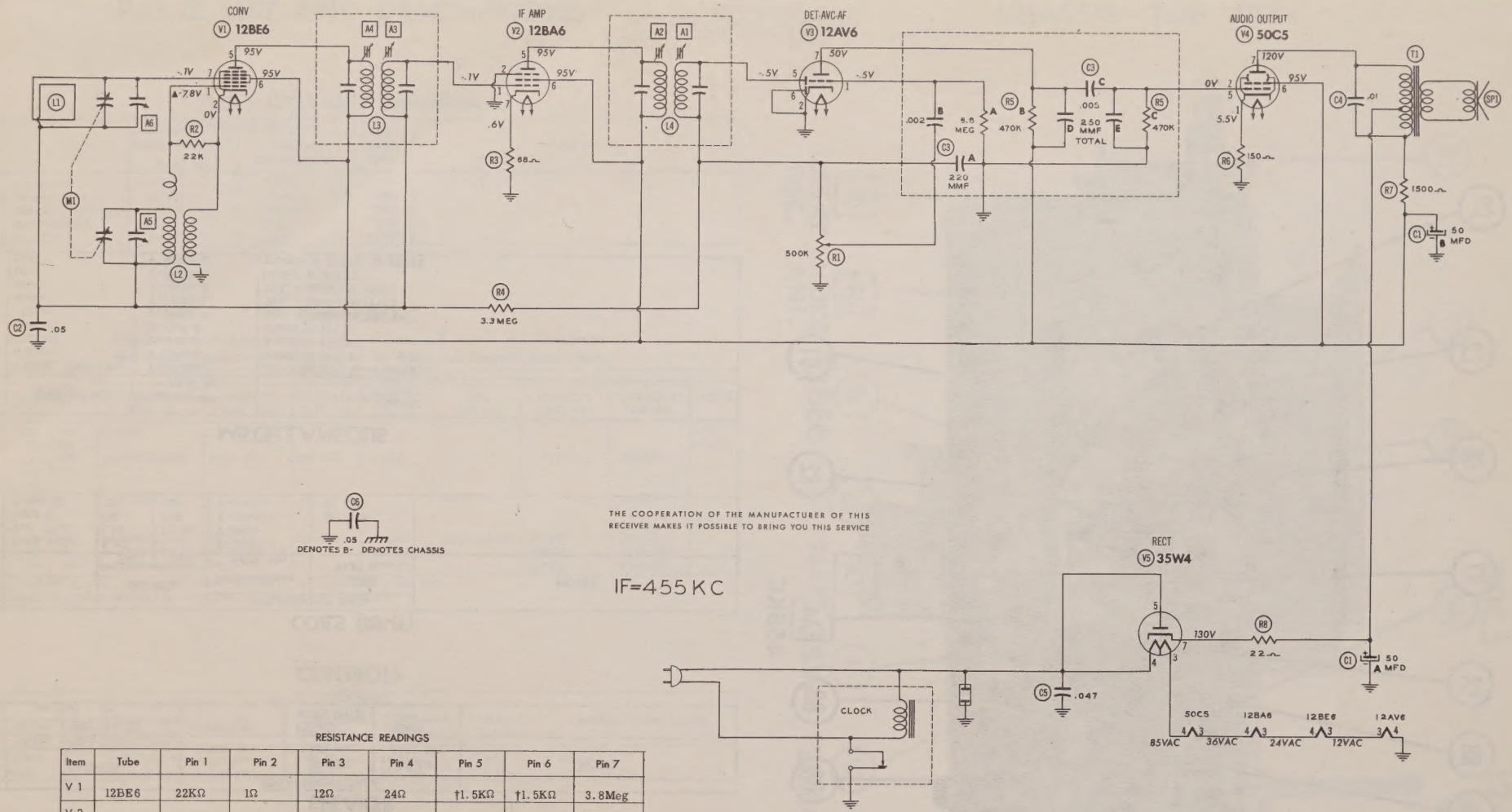
MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	2 Gang. Var. Cap.	V-10788-1	(22-398MMF, 16-147MMF)
	Cabinet	V-1248-3	Model H-367T5
	Cabinet	V-1248-4	Model H-374T5
	Cabinet	V-1248-5	Model H-375T5
	Knob	V-10784-3	Vol. - Model H-367T5
	Knob	V-10784-1	Vol. - Model H-374T5
	Knob	V-10784-2	Vol. - Model H-375T5
	Dial	V-10783-5	Model H-367T5
	Dial	V-10783-2	Models H-374T5, H-375T5

CHASSIS—BOTTOM VIEW



WESTINGHOUSE MODEL H-367T5 (Ch. V2157-8)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	3.8Meg
V 2	12BA6	3.8Meg	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	68Ω
V 3	12AV6	6.8Meg	0Ω	12Ω	0Ω	500KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	†1.5KΩ	†186Ω
V 5	35W4	†22Ω	0Ω	86Ω	121Ω	121Ω	103Ω	30KΩ

† MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.